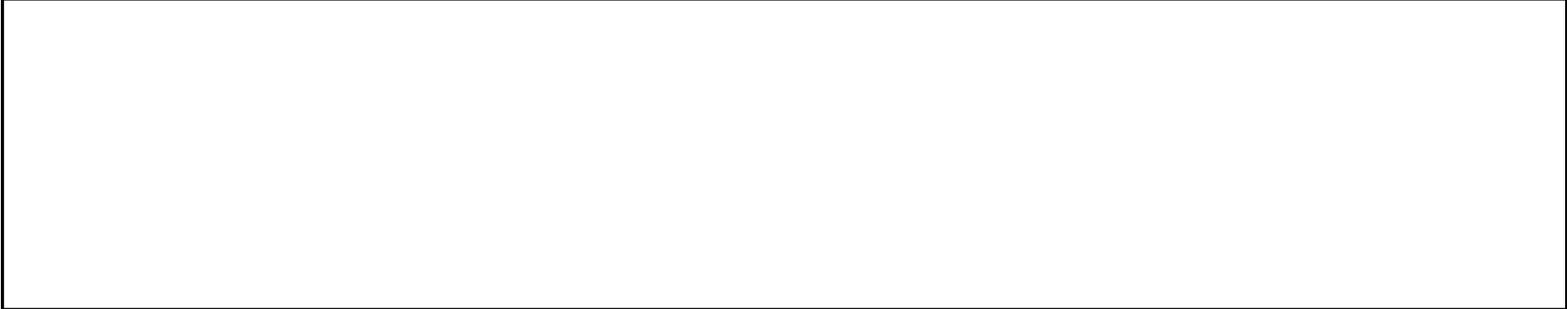




STAT



Declass Review by NGA.

*TRIAL OPTICAL
WITH 200"*



58Y12

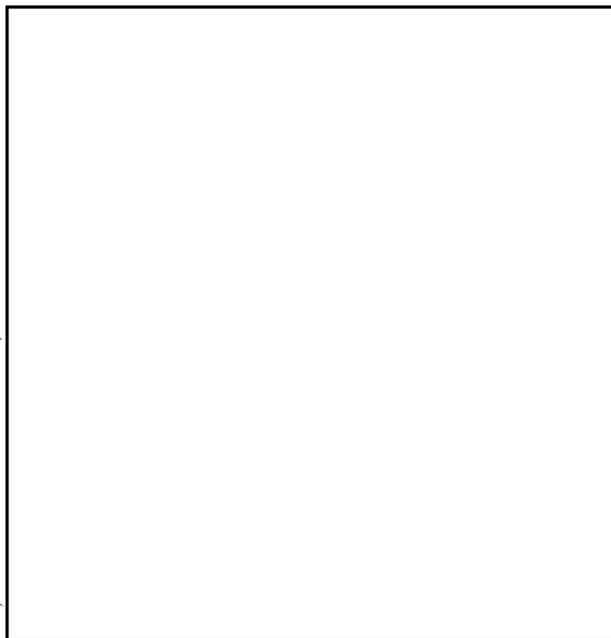
STAT

STATUS REPORT

FOR

NOD 110/120 ZOOM LENS DESIGN

10 January 1968



STAT



STAT

EUGENE DIETZGEN CO.
MADE IN U. S. A.

NO. 343-10 1/2 DIETZGEN GRAPH PAPER
10 X 10 PER HALF INCH

MAGNIFICATION

30
20
10
0

S = SAGITAL
T = TANGENTIAL

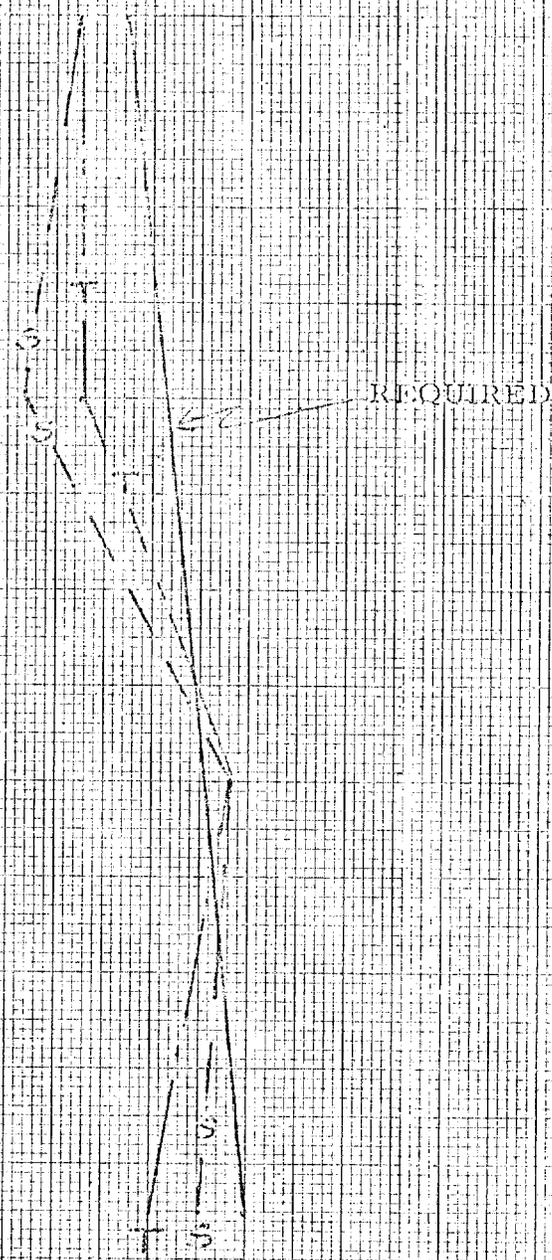
RESOLUTION (L./mm)

[REDACTED]

ZOOM LENS

NOD-110 PREDICTED PERFORMANCE

- OFF AXIS -



STAT

3/15/68
HVB

EUSENZ DIETZGEN CO.
MADE IN U. S. A.

NO. 340-10 1/4 DIETZGEN GRAPH PAPER
10 X 10 PER HALF INCH

MAGNIFICATION



PREDICTED

REQUIRED

RESOLUTION (L/mm)

[Redacted Box]

ZOOM LENS

NOD-110 PREDICTED PERFORMANCE

- ON AXIS -

3/15/68

HVB

STAT

DISCUSSION

An extensive analysis has been made of the NOD 110/120 "Two Barrel" zoom lens design as of this date. The results are shown in Figures 1 through 25. Figure 1 shows the predicted axial resolution vs. magnification and Figure 2 shows the predicted edge resolution (15" off-axis) vs. magnification for the overall system. Each curve shows the required resolution as per [redacted] letter T3410-66-135. The remaining figures show the Modulation Transfer Function (MTF) curves for the various magnifications at the on-axis, edge, 3/4 edge and 1/2 edge conditions. Sagittal and tangential curves have been included for the off-axis conditions. All MTF curves have been plotted for a given plane of best focus which gives best sagittal and tangential imagery without deteriorating the on-axis resolution under the required limits. Both Lens prescriptions are also included. Figure 25 shows how the screen resolution varies from the center to the edge of the screen. MTF curves were obtained for the 1/2 edge and 3/4 edge of the screen.

STAT

does this mean no refocus

The MTF curves were obtained from data using the two dimensional evaluation program developed by [redacted] Since by definition, transfer function is the ratio of the contrast in the image to that in the object (F. Dow Smith, Appl. Optics Vol. 2, April 1963) then the absolute contrast of the image is dependent upon the contrast of the target.

STAT

The MTF value of .05 was chosen as a value which will reasonably produce the actual resolution required. Experience with the NOD-100 viewer has shown that this is a reasonable value. See Figure 26. Many factors can contribute to a difference in observed resolution and predicted resolution. Different observers also differ as to what is a reasonable MTF value to use as a criteria. Figure 27 shows how various observers differ on this subject. Some factors which contribute to these differences can be listed as: light scattering, flare, brightness of image, ambient room lighting, F/No of imaging beam, observer experience and mental attitude. However, [redacted] will continue to use the MTF value of .05 in establishing the predicted resolution for the time being, as this tighter requirement will to a great extent reduce the stringent manufacture and assembly tolerances required to mechanize the design. Table 1 shows the required F/NO at the film for different magnifications which are necessary to produce the required resolution. These were also determined using the .05 MTF criteria.

does this factor include screen performance

STAT

Since the limit of resolution is based on an MTF of .05, the predicted resolution is determined from the MTF curve at the point where it first crosses the .05 MTF response. If the curve falls below the .05 response and then rises above it again, the subsequent crossing points are not considered since it is felt that the resolution between these crossing points is lost and is not a true representation.

what about phase relationship

Based on this criteria, therefore, the curves in Figure 1 show that at all magnifications the predicted axial resolution will exceed the required resolution. The predicted edge resolution, in the tangential direction, will meet or exceed the required resolution (with the exception of the overlapping magnification from 25x to 30x). The sagittal resolution has not met the required resolution only at the lower end of the magnification range.

CONCLUSION

It is felt that by compromising the ranges of the two lenses, all of the edge resolutions can be made to meet the requirements. At present the magnification ranges are 2.4x to 70x (2.5:1) and 3x to 30x (10:1). By reducing the low range to 3x to 20x and increasing the high range to 15x to 70x or a 3x to 25x and 20x to 70x combination will provide a more realistic solution to meeting the required resolution at all conditions. Work will proceed in this direction. Work will also continue on the present range of lenses. However, it is felt that substantial improvement will not be made at ranges above 25x in the 3x-30x zoom range. This is because during the optimization, the maximum magnification at which the optimization occurred was 20x, in order to reduce the overall range. As recently as the beginning of this year, the optimization program has been modified by [redacted] for use on the CDC 6600 computer. It has been substantially improved in its optimization capabilities as well as providing better control for the optimization.

then why continue

A brief summary of steps taken to arrive at the present zoom lenses is as follows:

1. High magnification zoom lens was optimized without the negative auxiliary, but with the positive auxiliary lens.
2. The negative auxiliary was optimized separately.
3. The negative auxiliary was then mated with the zoom lens and the combination was then evaluated with previous optimization of the combination.
4. The same procedure was followed for the low zoom range lens.

It is felt that further optimization with the complete system of each lens will further improve the quality.

COST

ZOOM LINE BOX TO BOX RANGE PROJECTION
 BOX SETTING

100.50 MM
 20.00 MM

MM	MM	IN	IN
THICKNESS	THICKNESS	THICKNESS	THICKNESS
94.75	2451.35	1.00000	.00000
12150.72	15.12	1.69100	.01261
200.70	35.43	1.64900	.01520
314.04	9.66	1.00000	.00000
351.36	16.12	1.69100	.01261
1324.37	22.57	1.00000	.00000
- 449.88	12.74	1.69100	.01261
948.31	7.62	1.00000	.00000
512.32	27.93	1.54900	.01920
- 233.36	12.74	1.69100	.01261
1194.42	274.00	1.00000	.00000
1263.30	11.38	1.72825	.02563
162.76	39.45	1.56873	.00902
- 362.66	12.44	1.00000	.00000
200.65	19.57	1.56873	.00902
- 946.49	53.81	1.00000	.00000
- 124.01	6.99	1.69160	.01113
173.23	12.83	1.00000	.00000
- 863.71	3.80	1.69395	.02325
- 62.95	7.57	1.00000	.00000
- 92.06	11.02	1.64250	.01132
510.03	114.80	1.00000	.00000
198.12	9.77	1.73520	.01768
135.51	13.72	1.60311	.00925
- 163.54	4.17	1.00000	.00000
539.36	9.33	1.52249	.00373
- 111.35	7.54	1.71736	.02421
- 456.83	36.55	1.00000	.00000
4711.25	7.24	1.69713	.01239
79.45	3.59	1.00000	.00000
86.32	8.85	1.72151	.02467
290.86	11.75	1.00000	.00000
- 127.80	12.72	1.69713	.01239
438.79	126.96	1.00000	.00000
1562.55	14.45	1.61272	.01045
- 209.33	.53	1.00000	.00000
387.16	30.90	1.61272	.01045
- 159.51	41.95	1.72151	.02467
- 1449.22	496.00	1.00000	.00000

MOVING SPACINGS

This data shall not be disclosed outside the Government or be duplicated, used or disclosed in whole or in part for any purpose other than to evaluate the proposal; provided, that if a contract is awarded to this offeror as a result of or in connection with the submission of such data, the Government shall have the right to duplicate, use, or disclose this data to the extent provided in the contract. This restriction does not limit the Government's right to use information contained in such data if it is obtained from another source.

12-19-57
 118-18+22

AT AIR SETTING

LD = 96 mm

THICKNESS INDEX	INDEX	$n_F - n_C$	
96.80	2328.32	1.00000	.00000
6461.17	8.56	1.69100	.01261
109.84	18.82	1.64831	.01920
166.85	5.13	1.00000	.00000
202.92	8.56	1.69100	.01261
703.77	12.00	1.00000	.00000
- 239.07	6.77	1.69100	.01261
502.94	4.85	1.00000	.00000
272.51	14.84	1.64831	.01920
- 150.53	5.77	1.69100	.01261
634.72	732.35	1.00000	.00000
- 1774.42	23.55	1.72151	.02467
268.50	44.95	1.61272	.01045
- 532.71	1.34	1.00000	.00000
261.63	26.09	1.61272	.01045
- 2386.30	13.75	1.00000	.00000
- 379.76	7.61	1.69680	.01239
272.41	6.79	1.00000	.00000
169.86	13.03	1.72151	.02467
- 4115.46	20.61	1.00000	.00000
- 372.56	7.61	1.69680	.01239
276.07	109.26	1.00000	.00000
- 5501.63	6.23	1.72151	.02467
438.85	14.60	1.57250	.00907
- 161.45	4.21	1.00000	.00000
206.68	14.60	1.57250	.00907
- 1168.67	17.53	1.72151	.02467
723.01	14.58	1.00000	.00000
- 324.21	5.70	1.69680	.01239
164.71	21.58	1.00000	.00000
176.64	11.47	1.72151	.02467
1998.00	7.94	1.69680	.01239
253.77	138.26	1.00000	.00000
903.59	16.62	1.61272	.01045
- 276.74	1.54	1.00000	.00000
174.27	31.32	1.61272	.01045
- 773.60	14.27	1.72151	.02467
174.10	36.44	1.00000	.00000
189.96	34.75	1.61272	.01045
3571.40	3.71	1.00000	.00000
332.58	24.81	1.61272	.01045
279.35	16.96	1.00000	.00000
- 259.72	14.66	1.72151	.02467
- 401.50	216.99	1.00000	.00000

MOVING SPACINGS

This data shall not be disclosed outside the Government or duplicated, used or disclosed in whole or in part for any purpose other than to evaluate the proposal; provided, that if a contract is awarded to this offeror as a result of or in connection with the submission of such data, the Government shall have the right to duplicate, use, or disclose this data to the extent provided in the contract. This restriction does not limit the Government's right to use information contained in such data if it is obtained from another source.

117-10-04+02
12-14-67

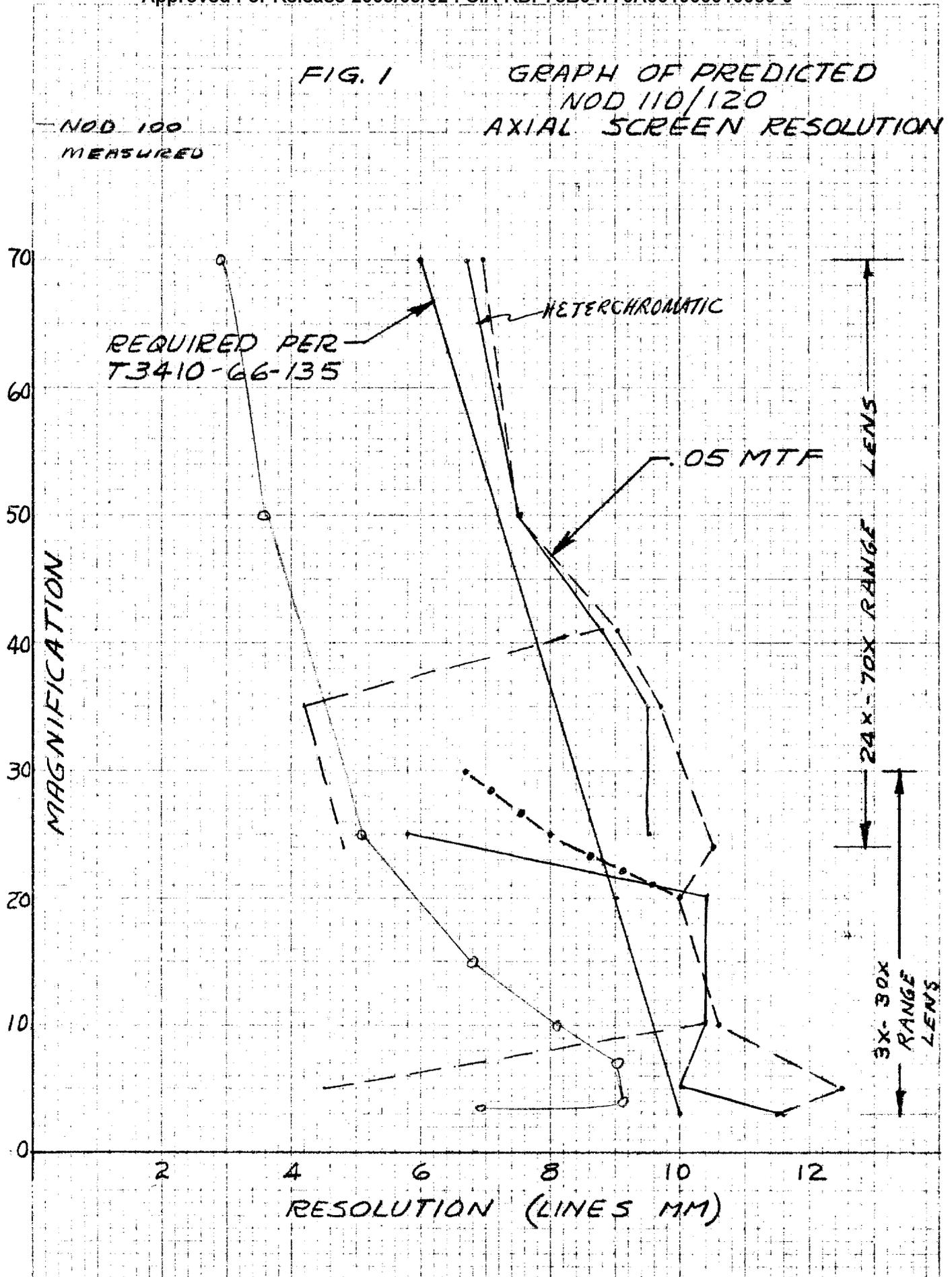
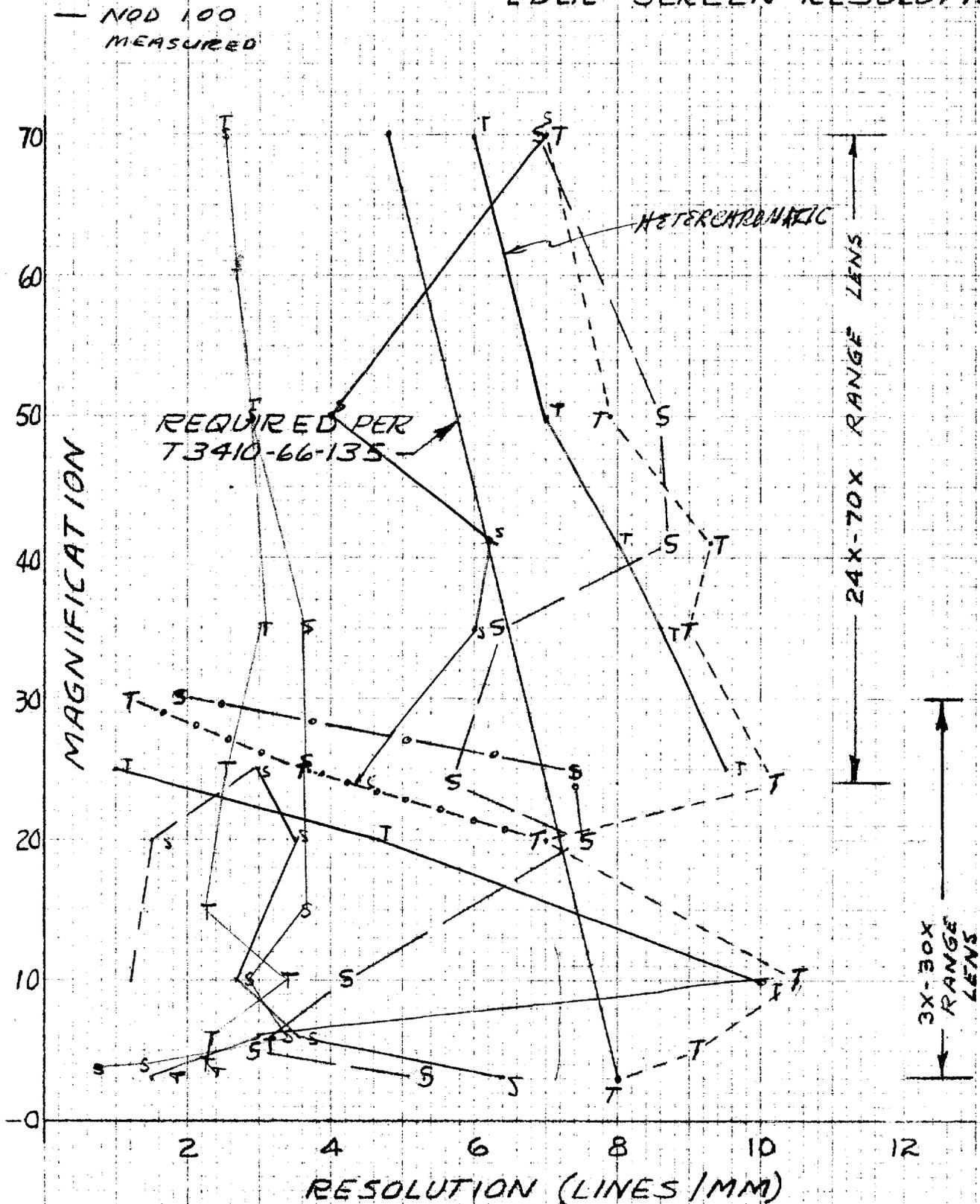
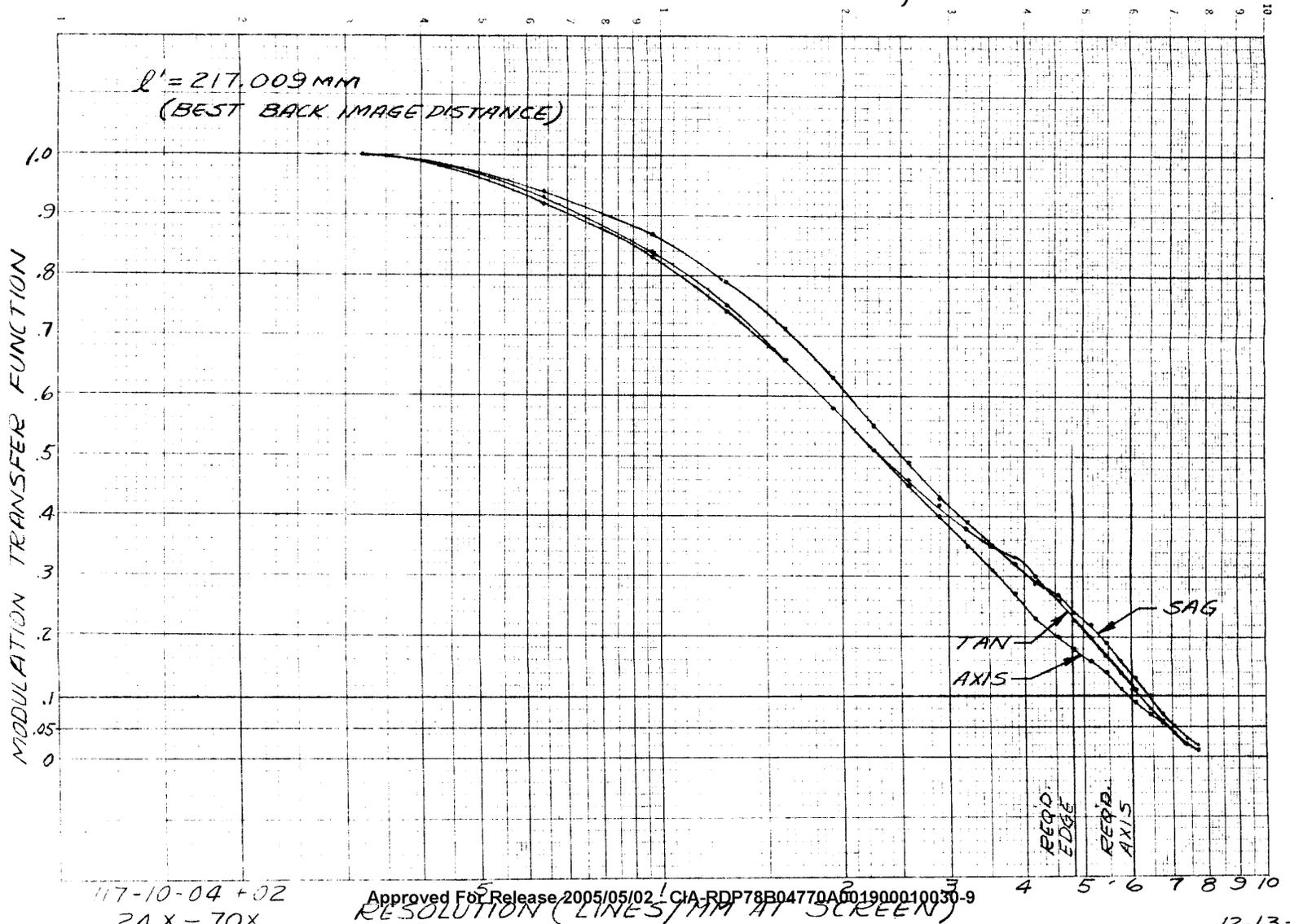


FIG. 2 GRAPH OF PREDICTED
NOD 110/120
EDGE SCREEN RESOLUTION

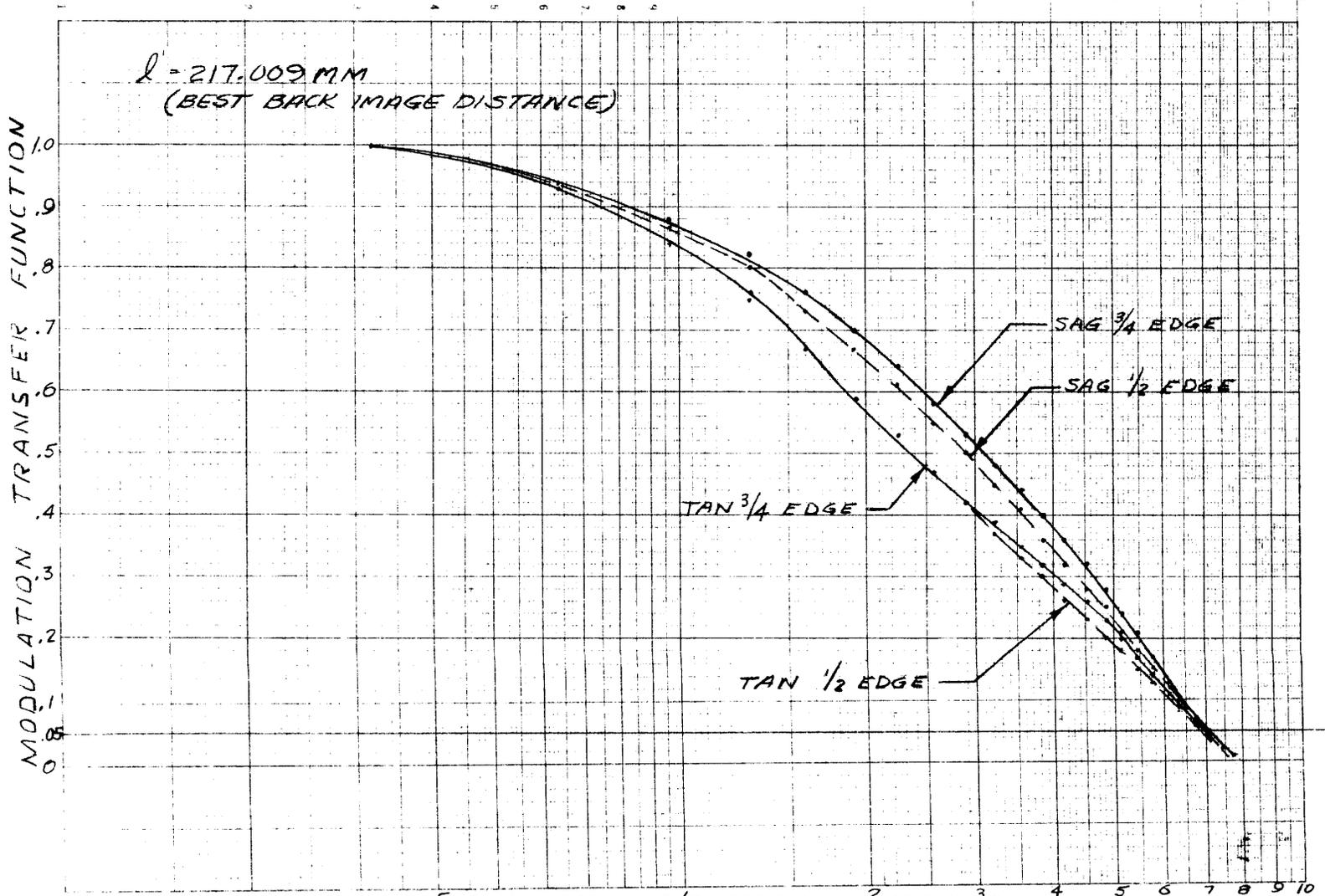


70X - AXIS, EDGE



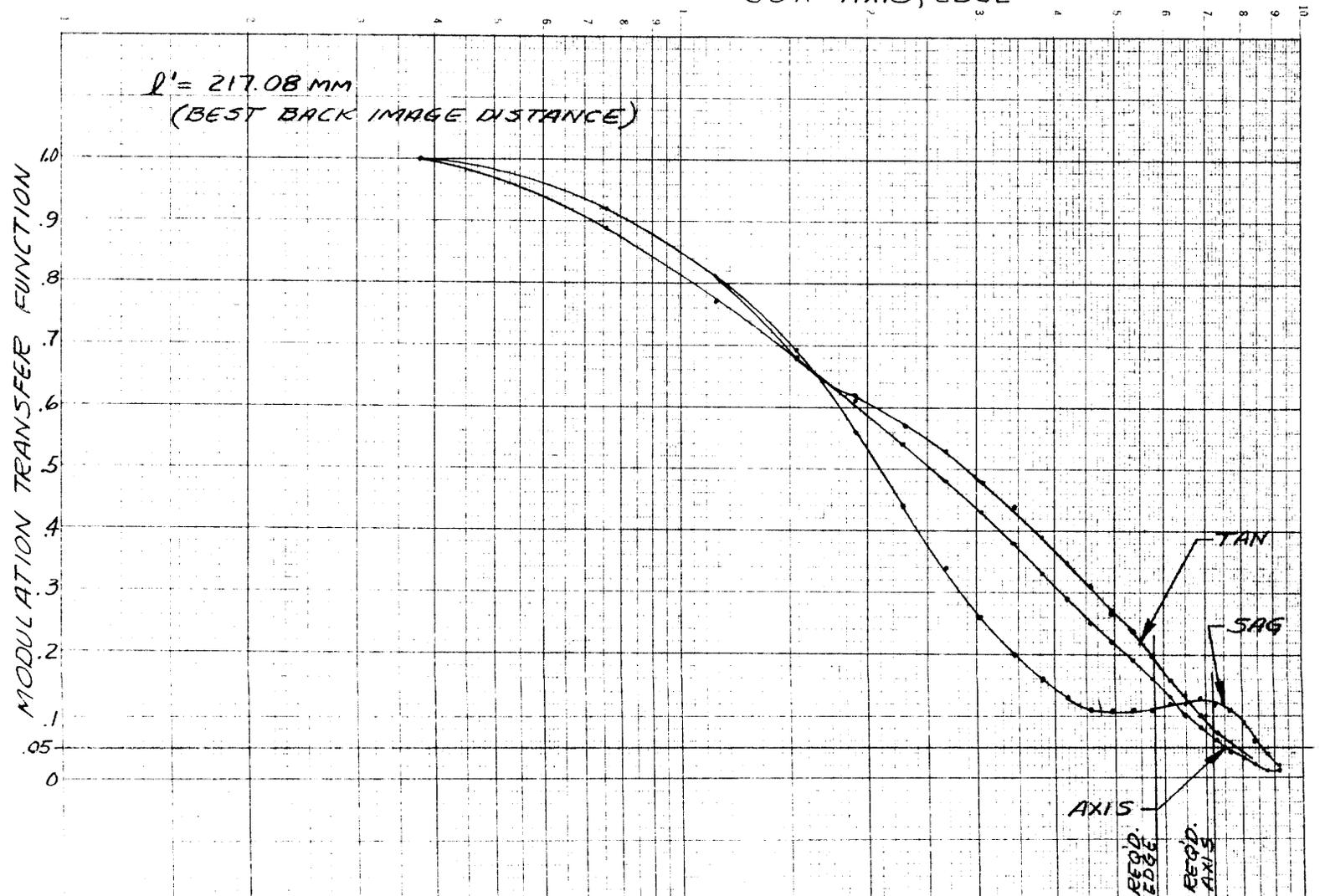
1/2 EDGE, 3/4 EDGE

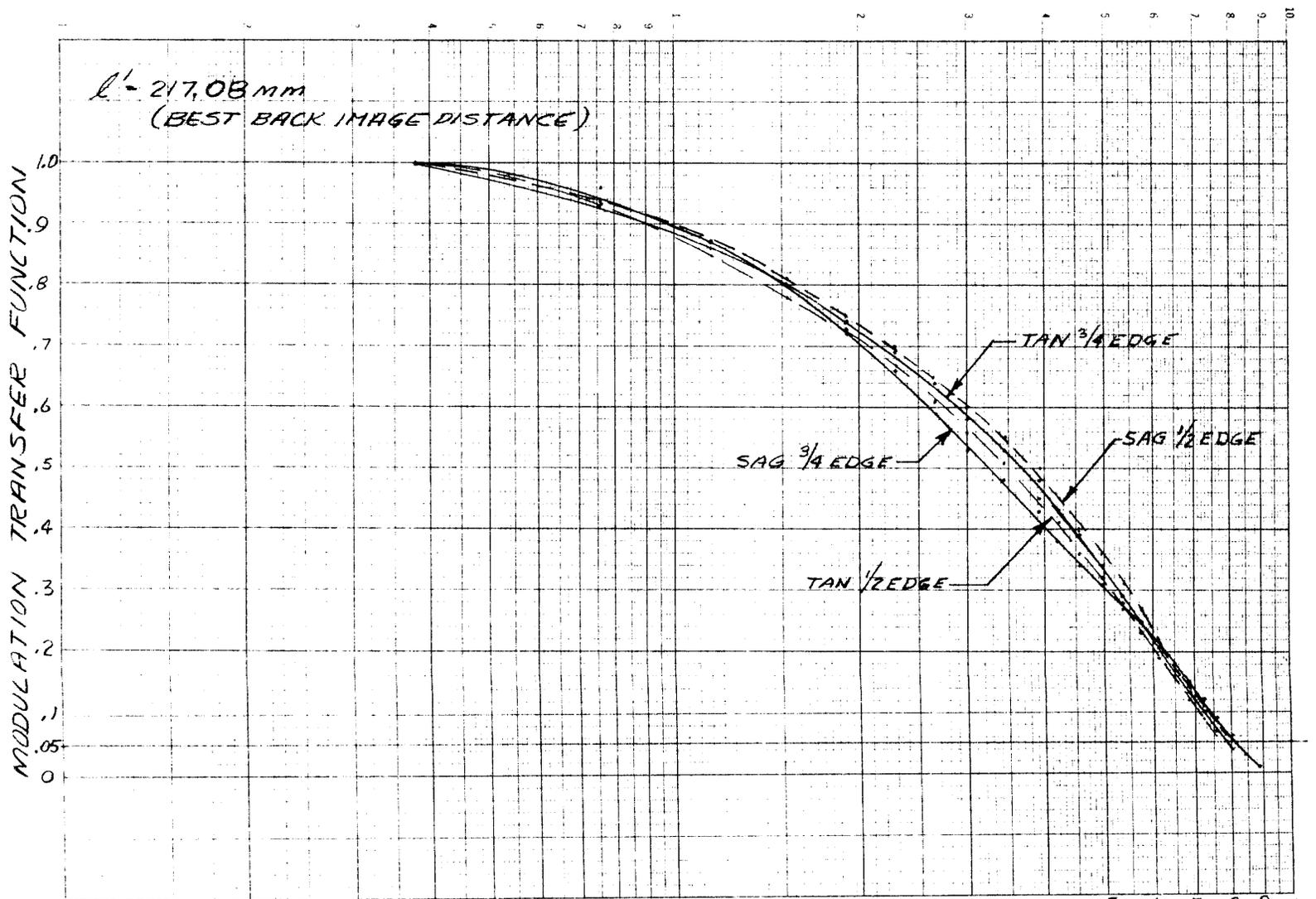
$l = 217.009 \text{ MM}$
(BEST BACK IMAGE DISTANCE)



50X - AXIS, EDGE

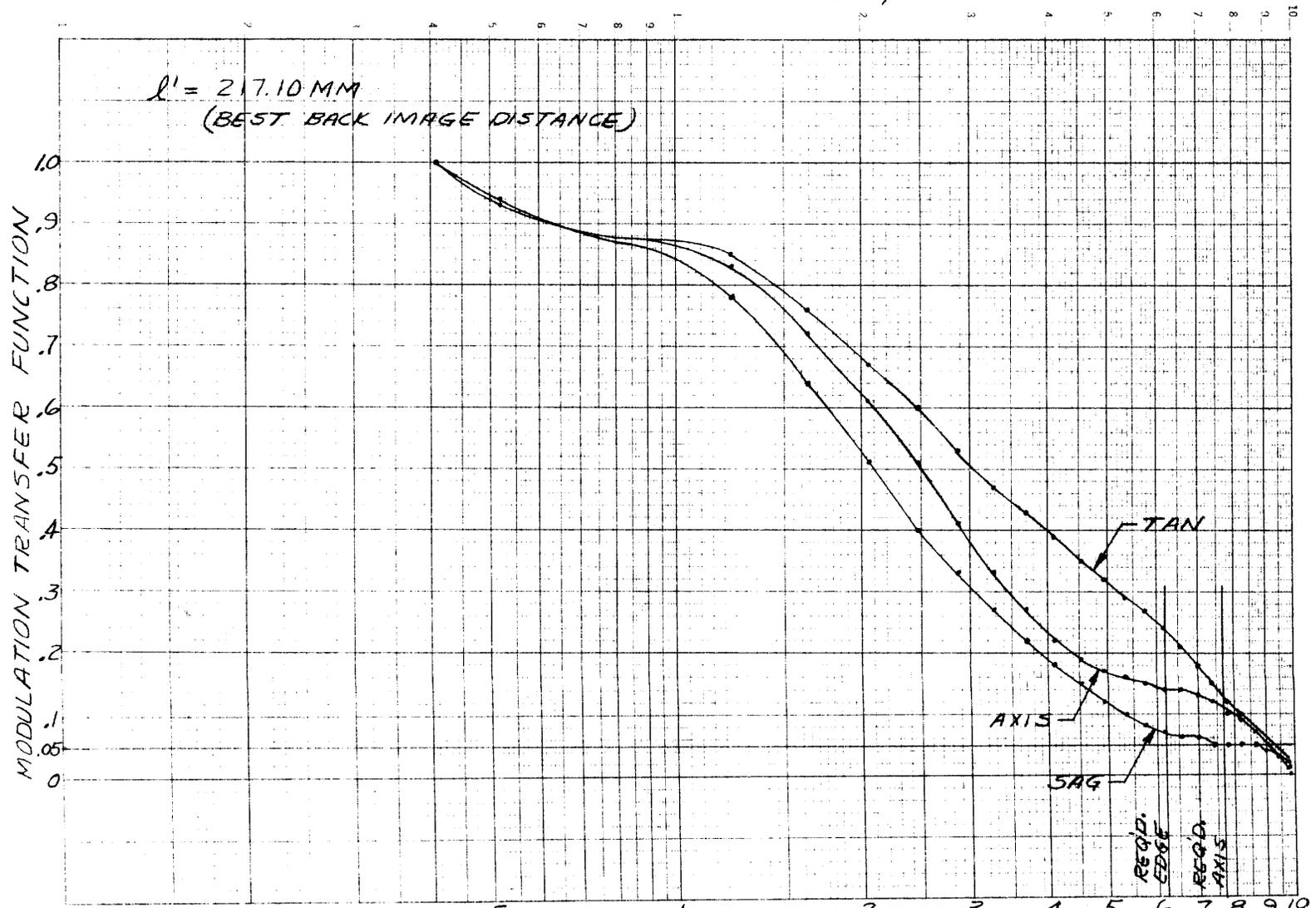
$l' = 217.08 \text{ mm}$
(BEST BACK IMAGE DISTANCE)





41X-AXIS, EDGE

$l' = 217.10 \text{ MM}$
(BEST BACK IMAGE DISTANCE)



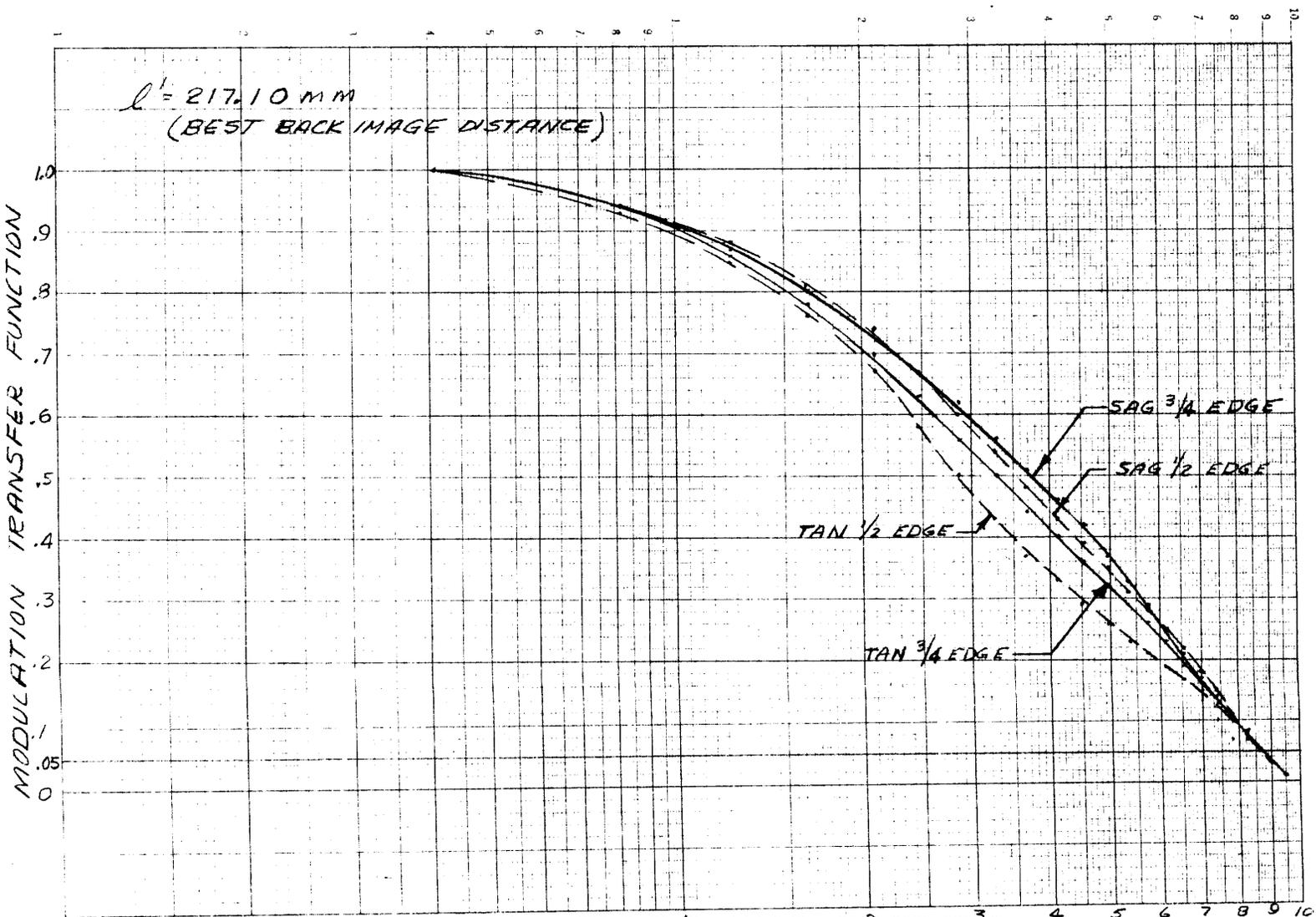
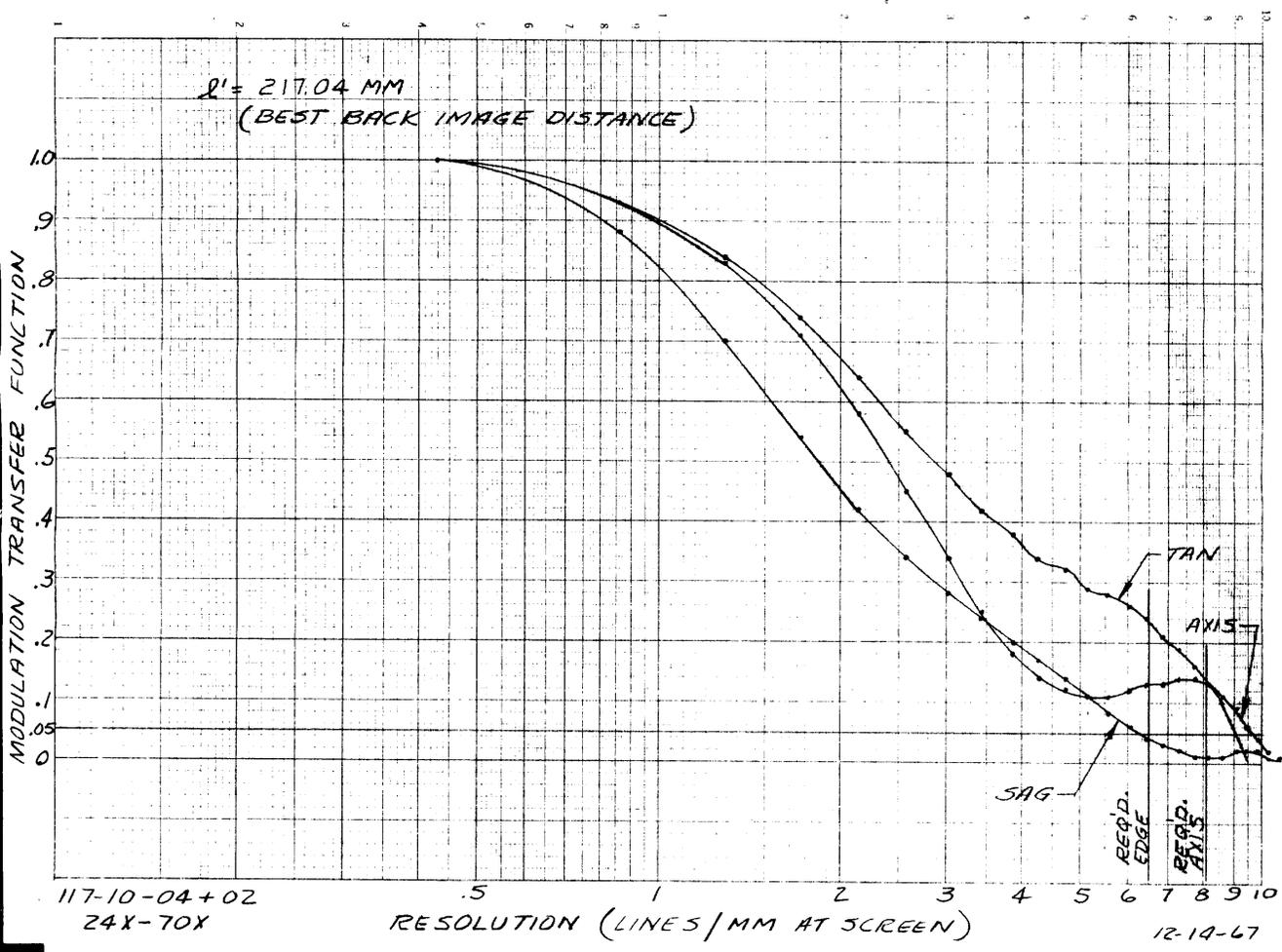
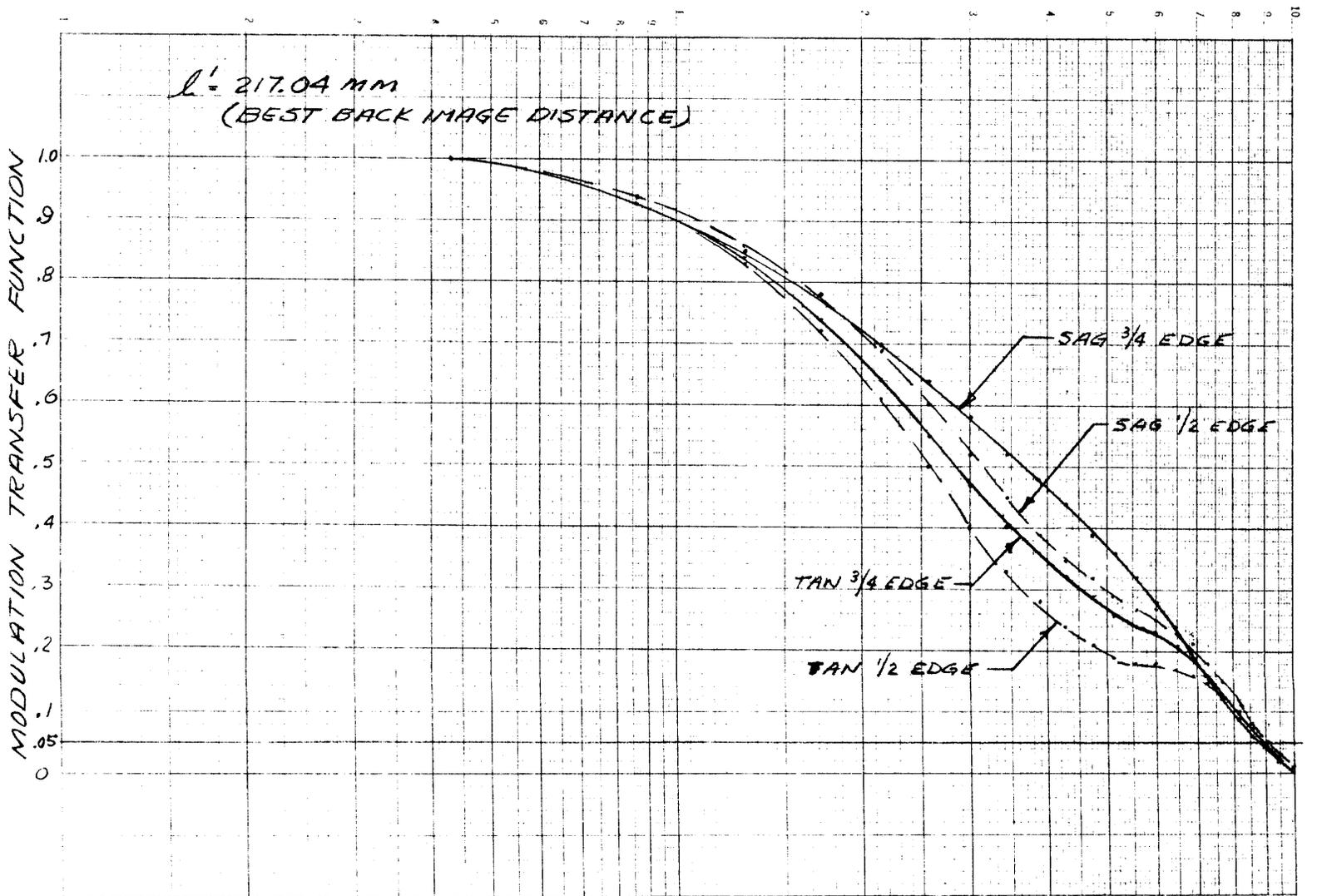


FIG. 9



SEMI LOGARITHMIC 46 4973
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FIG. 10
35X 1/2 EDGE 3/4 EDGE

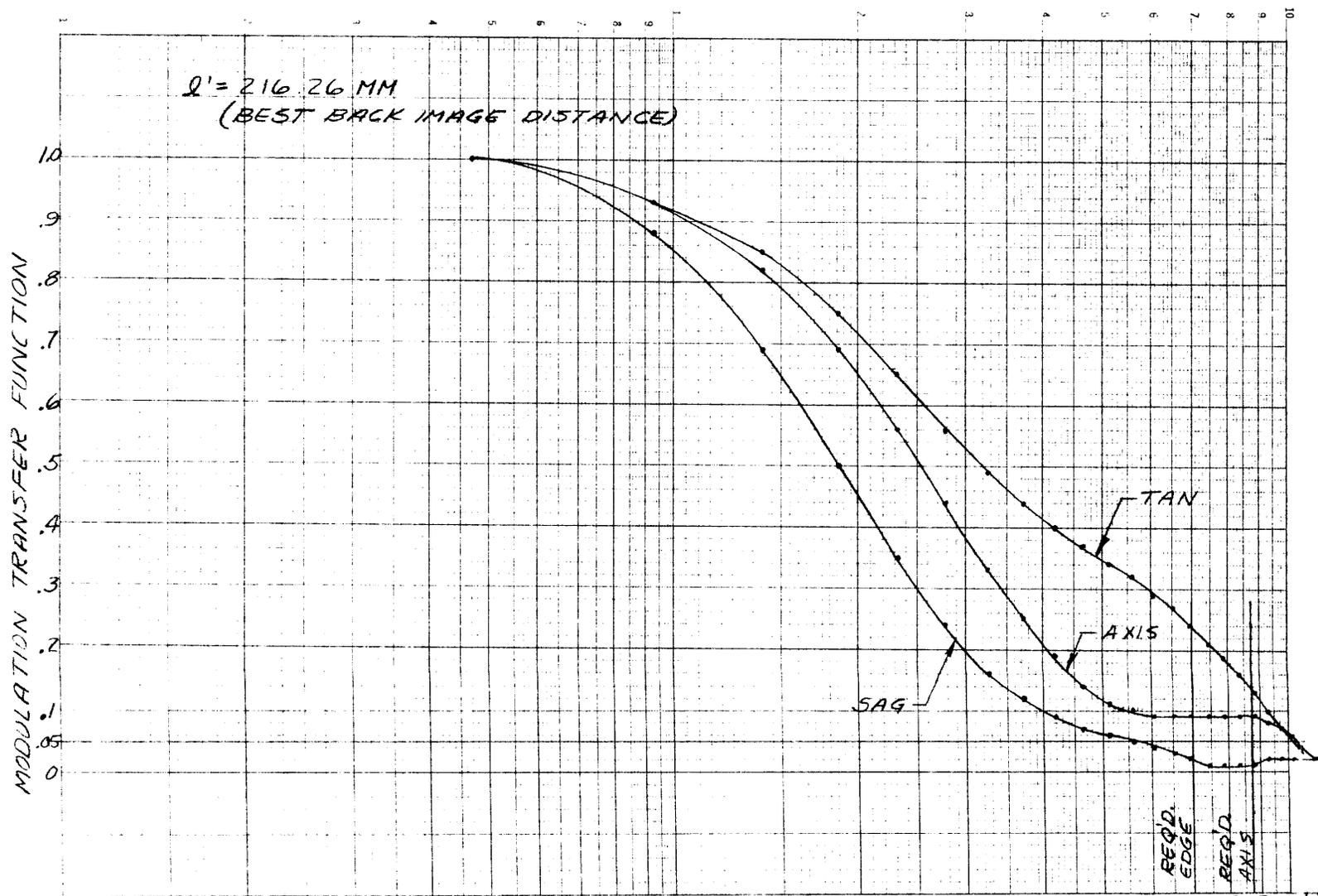


117-10-04 + 02
24X-70X

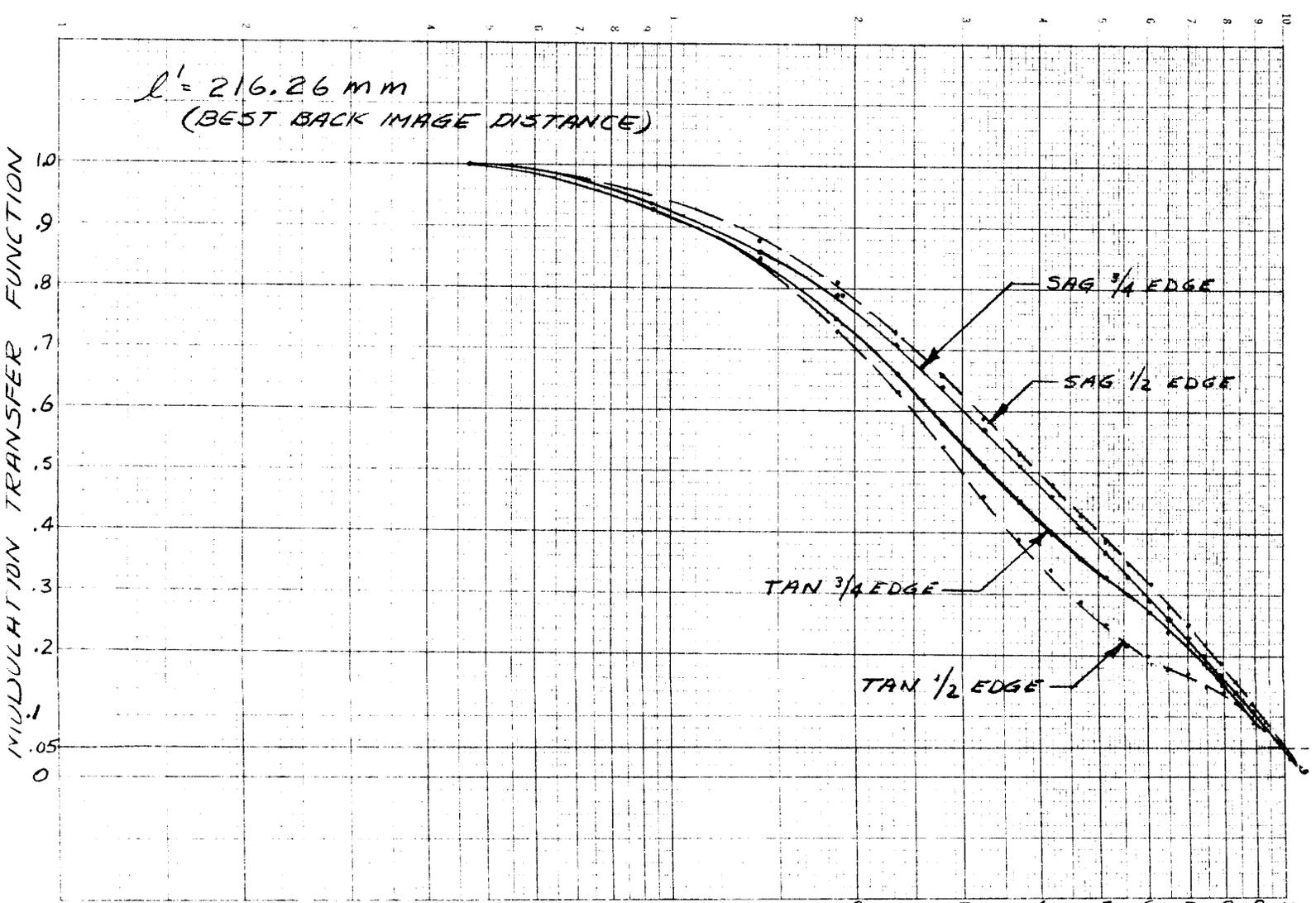
Approved For Release 2005/05/02 : CIA-RDP78B04770A001900010030-9
RESOLUTION (LINES/MM AT SCREEN)

12-18-67

24X AXIS, EDGE



Approved For Release 2005/05/02 : CIA-RDP78B04770A001900010030-9
 SEMI LOGARITHMIC 46 4973
 24 X 1/2 EDGE, 3/4 EDGE



117-10-04+02
 24x-70x

Approved For Release 2005/05/02 : CIA-RDP78B04770A001900010030-9

RESOLUTION (LINES / MM AT SCREEN)

12-18-67

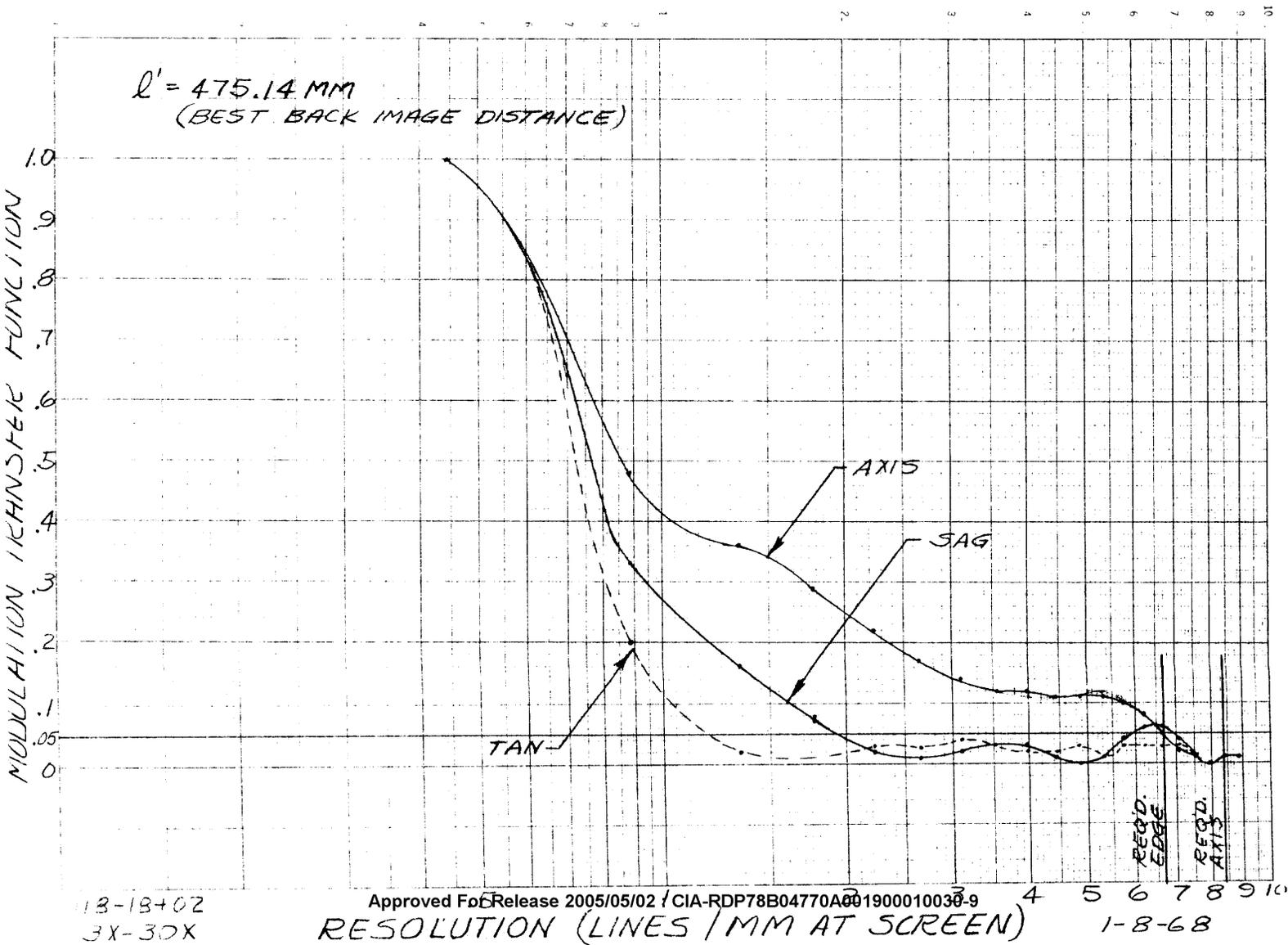
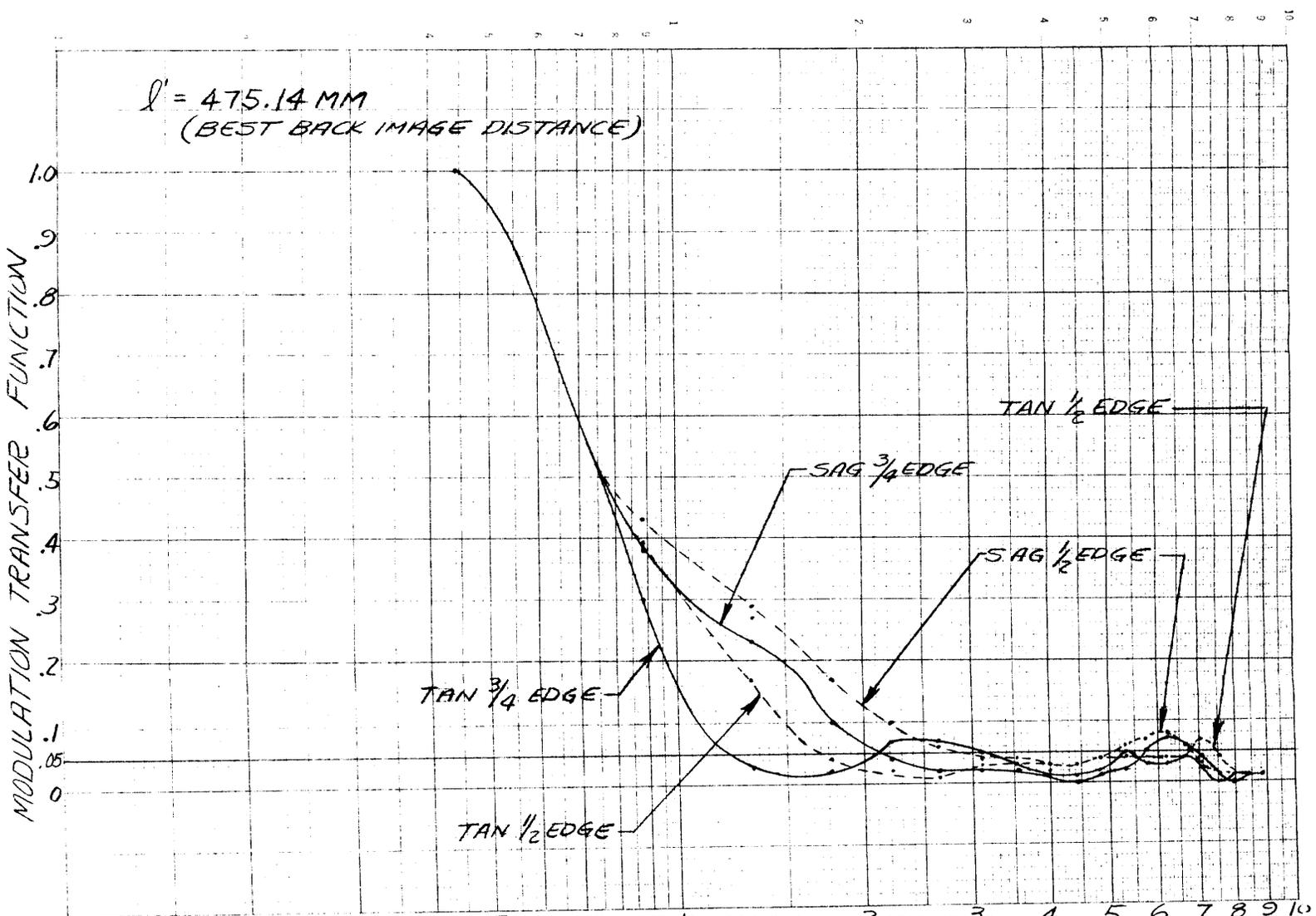
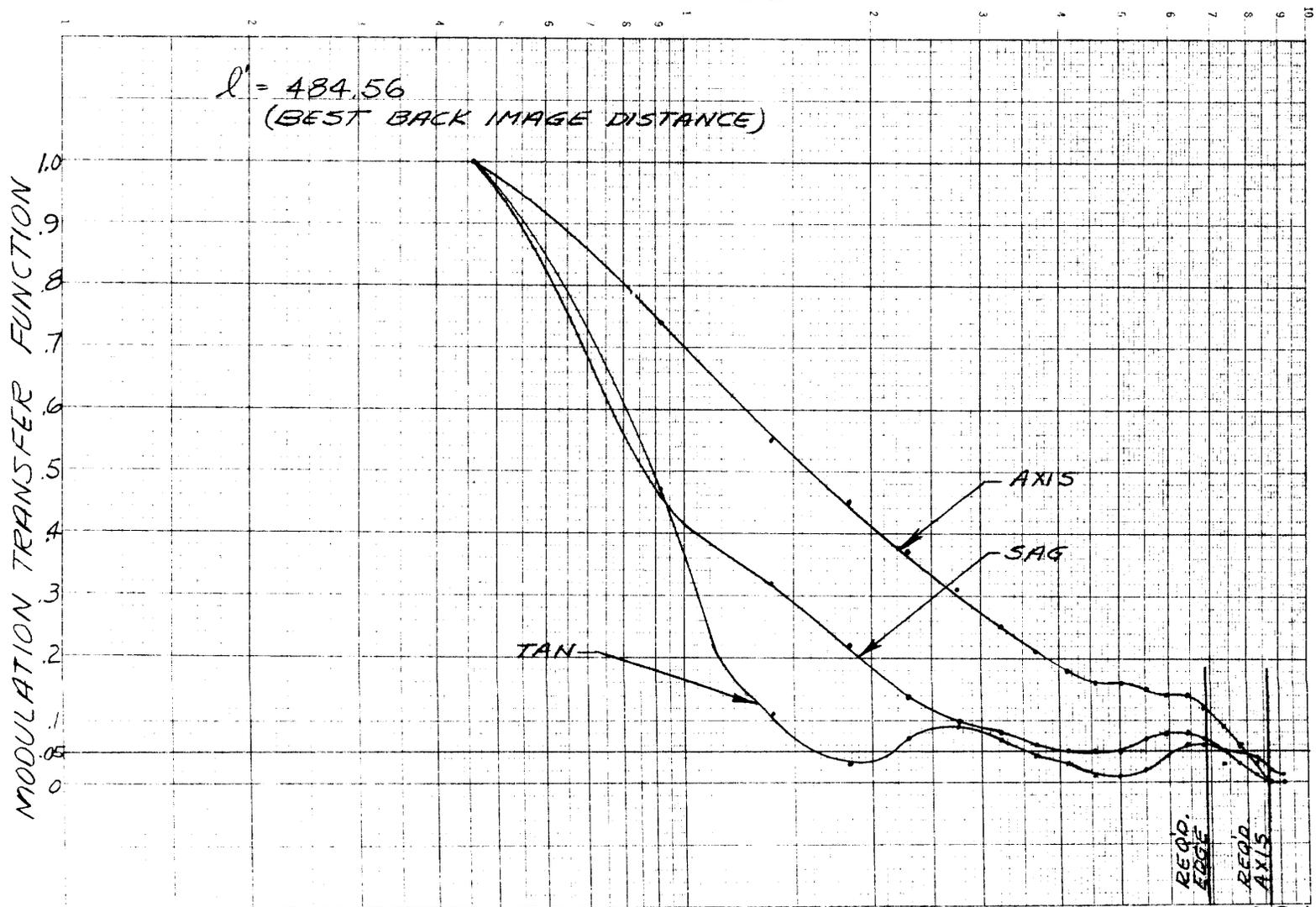


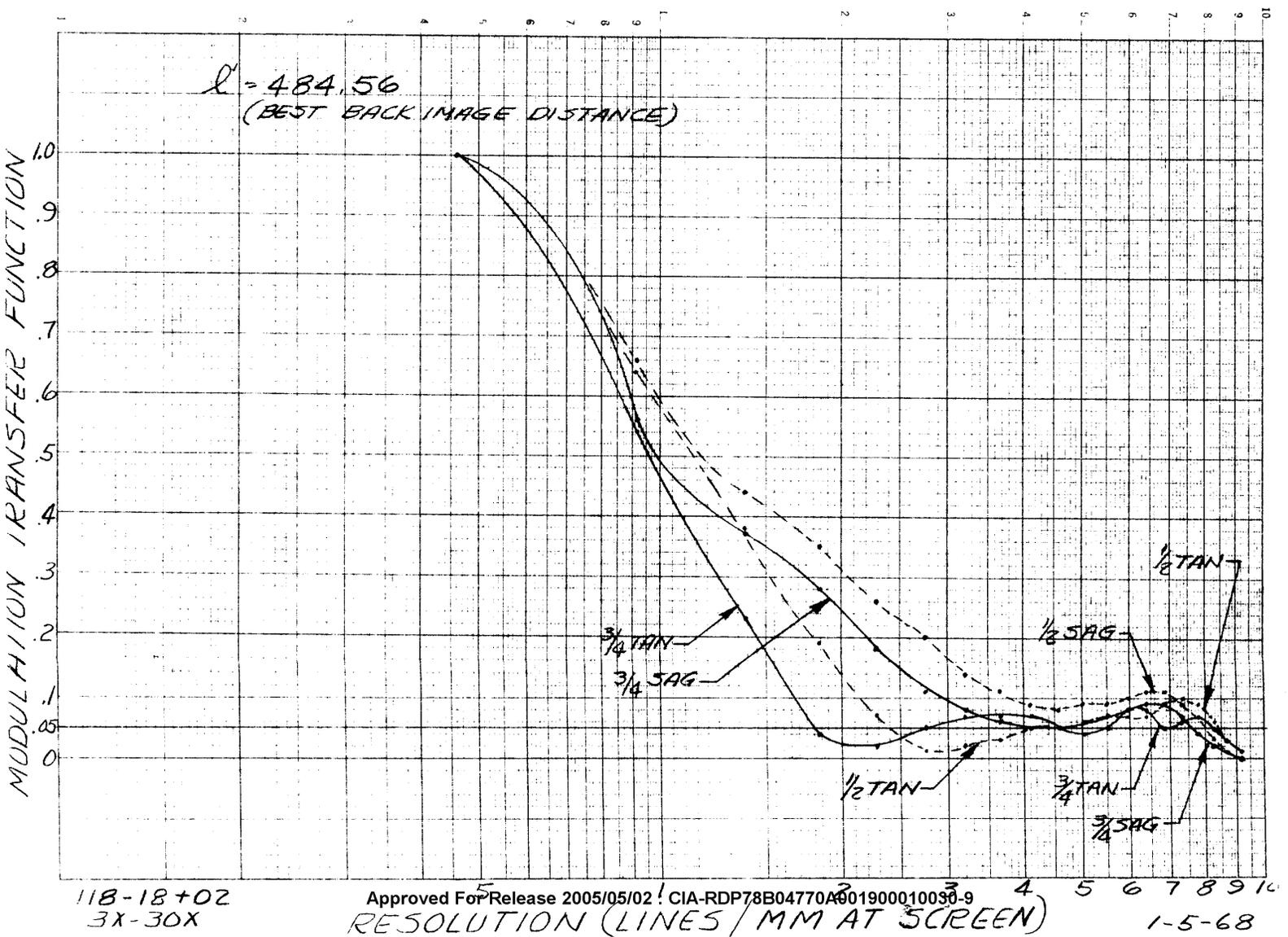
FIG. 14
30X 1/2 EDGE, 3/4 EDGE



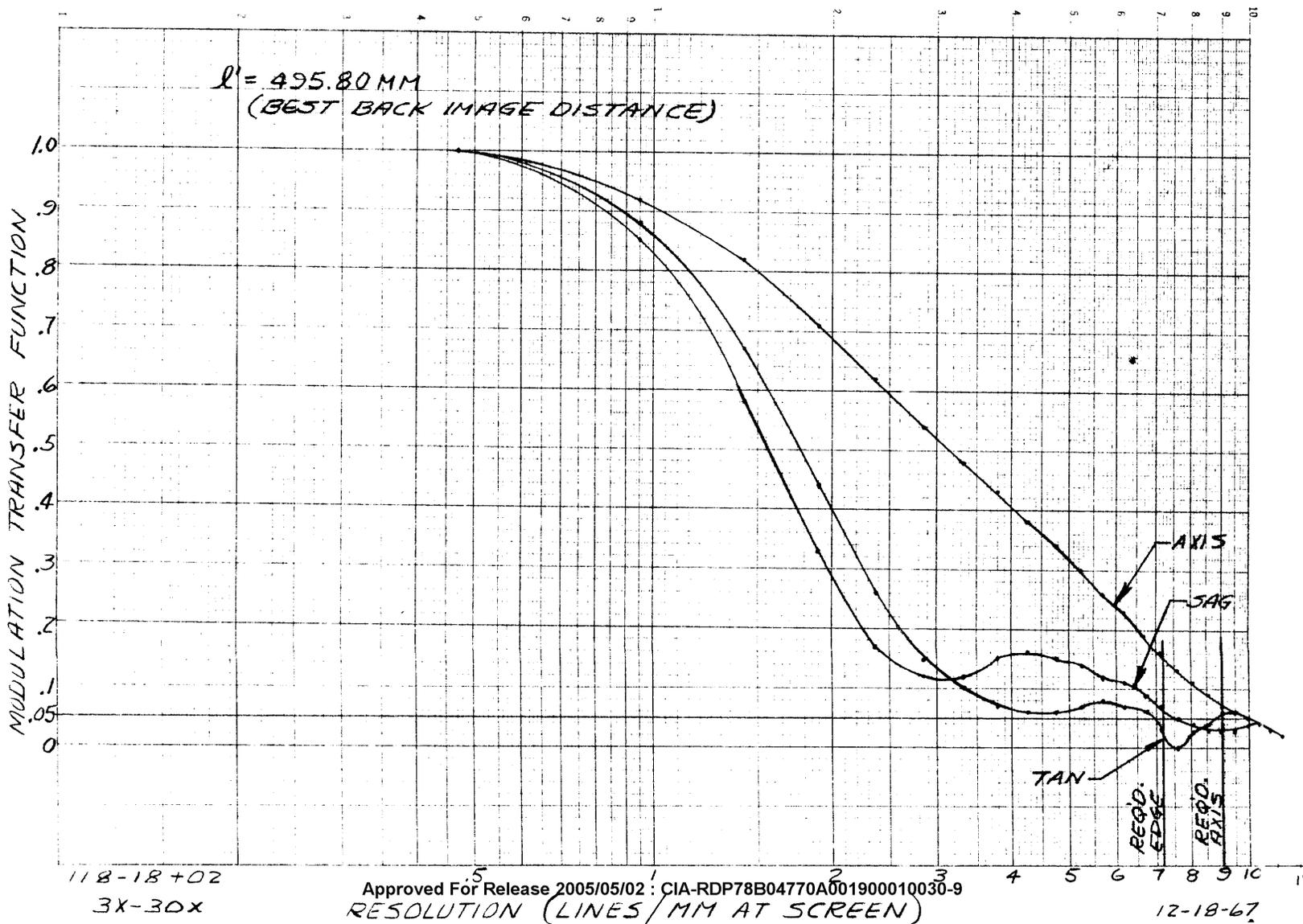
25X AXIS EDGE

$l' = 484.56$
(BEST BACK IMAGE DISTANCE)





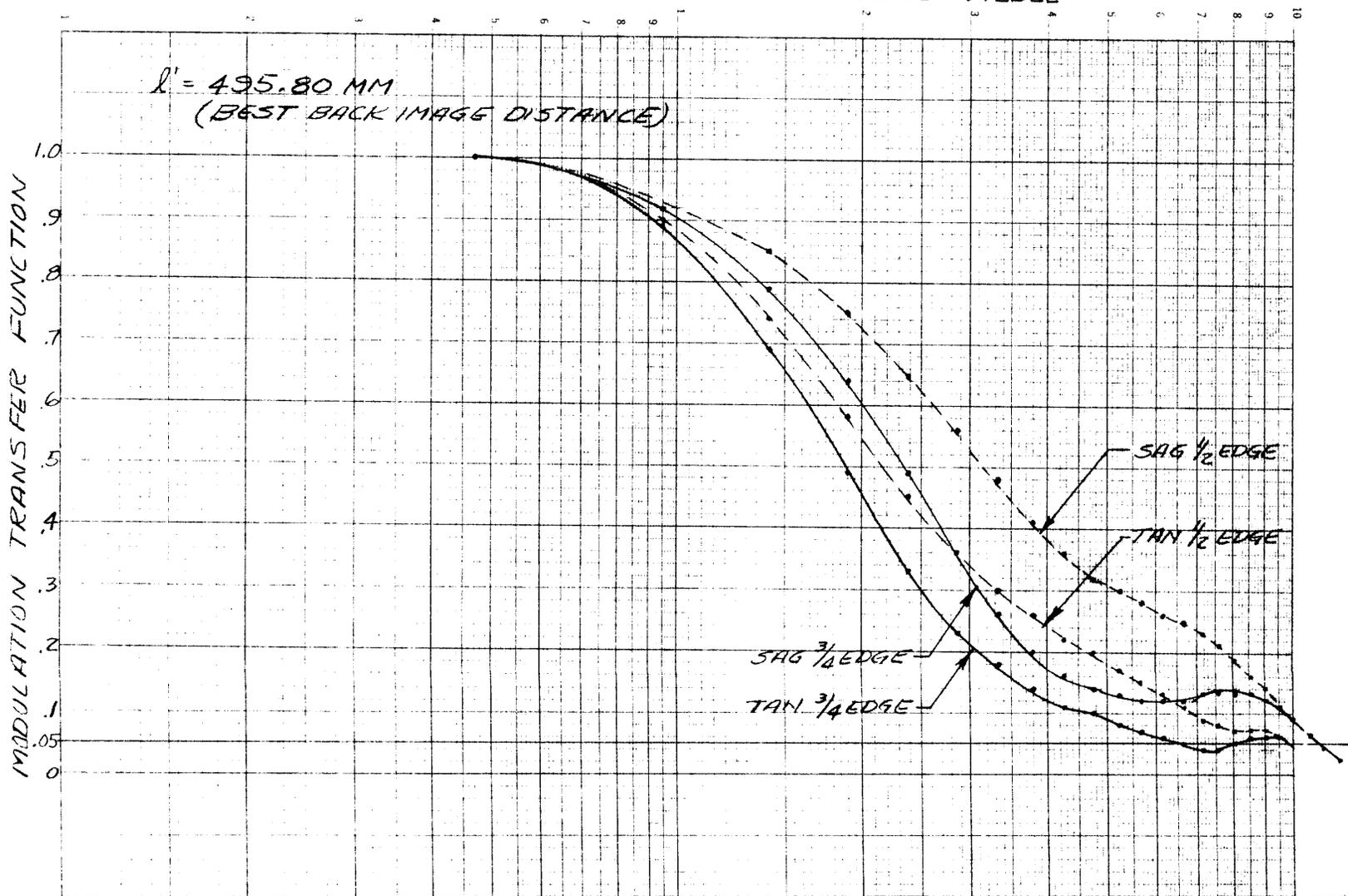
File 1/1
 20X AXIS, EDGE



TEUFEL & ERNER CO

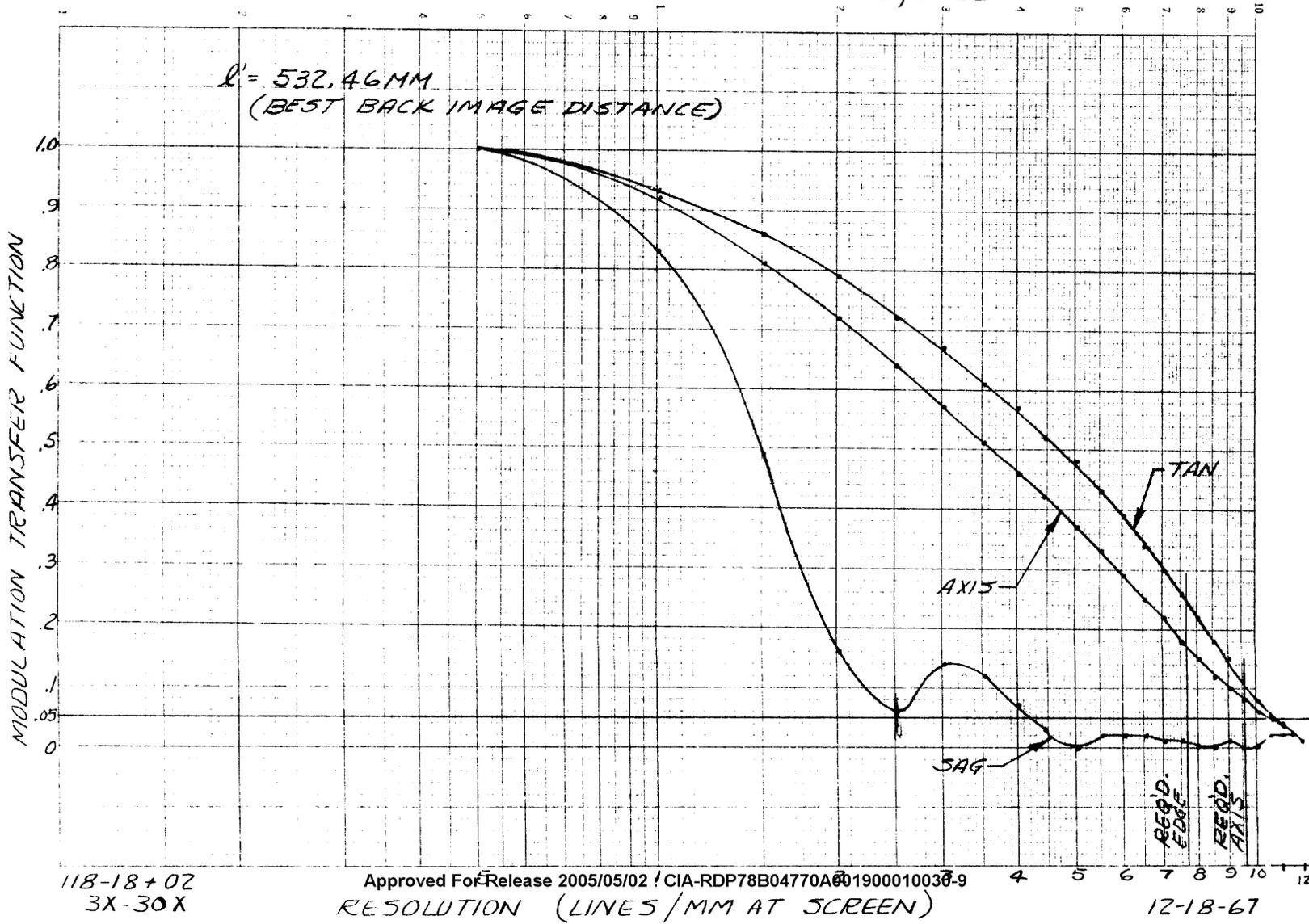
20X 1/2 EDGE 3/4 EDGE

$l' = 495.80 \text{ MM}$
(BEST BACK IMAGE DISTANCE)



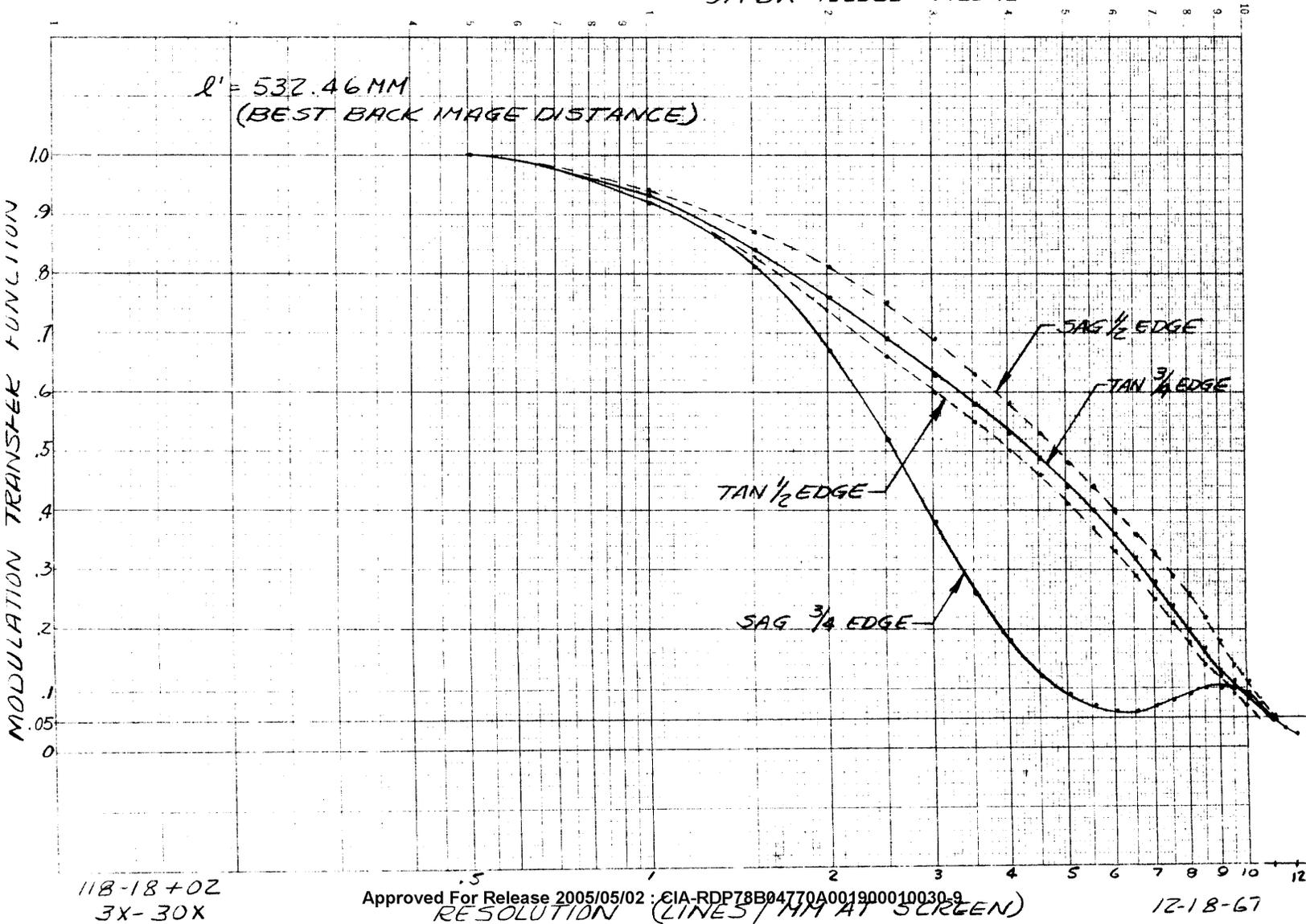
9.76 X AXIS, EDGE

$l' = 532.46 \text{ MM}$
(BEST BACK IMAGE DISTANCE)



9.76X 1/2 EDGE 3/4 EDGE

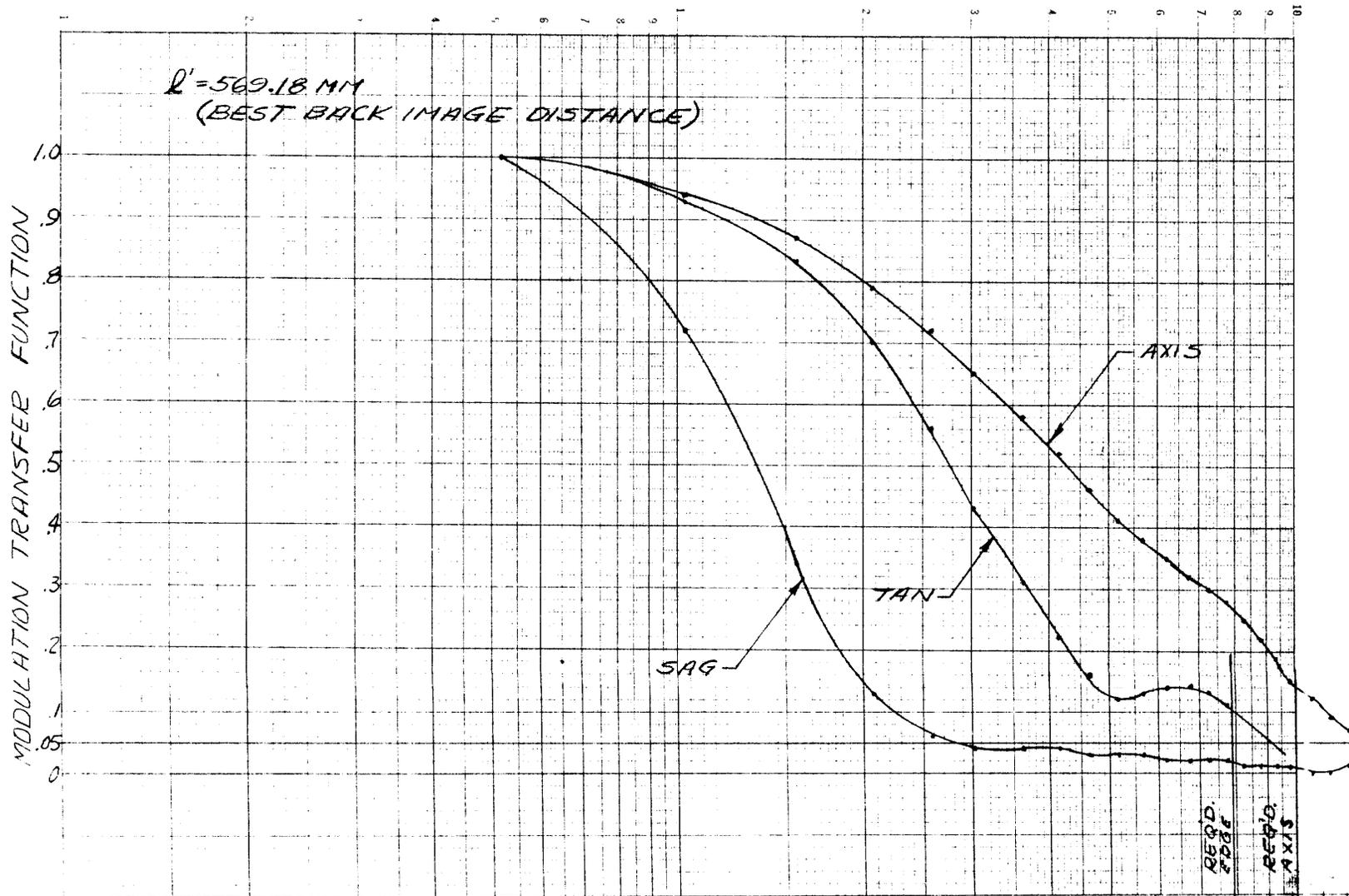
$l' = 532.46 \text{ MM}$
(BEST BACK IMAGE DISTANCE)



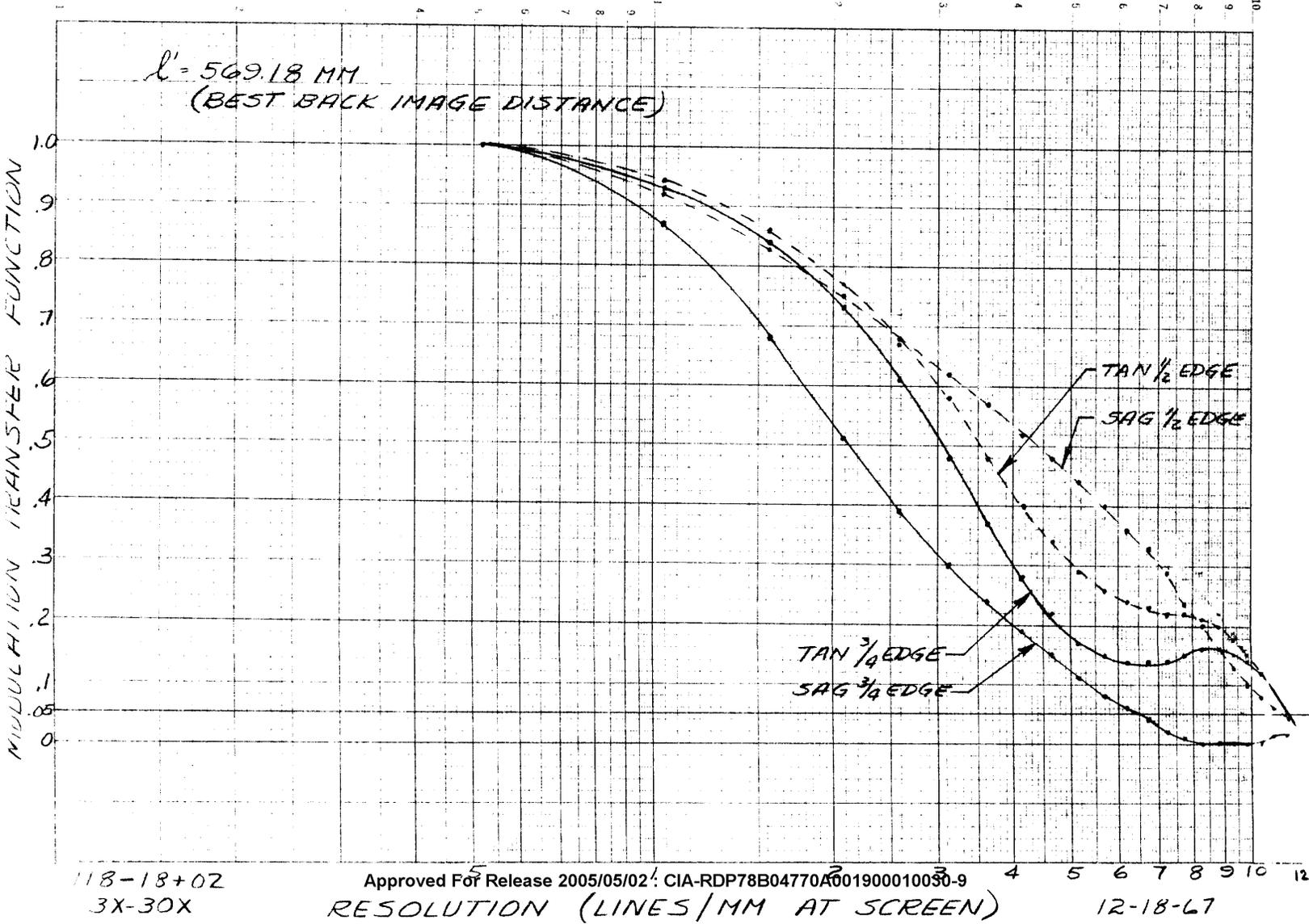
BUFFEL & ENSEN CO

5X AXIS EDGE

$R' = 569.18 \text{ MM}$
(BEST BACK IMAGE DISTANCE)



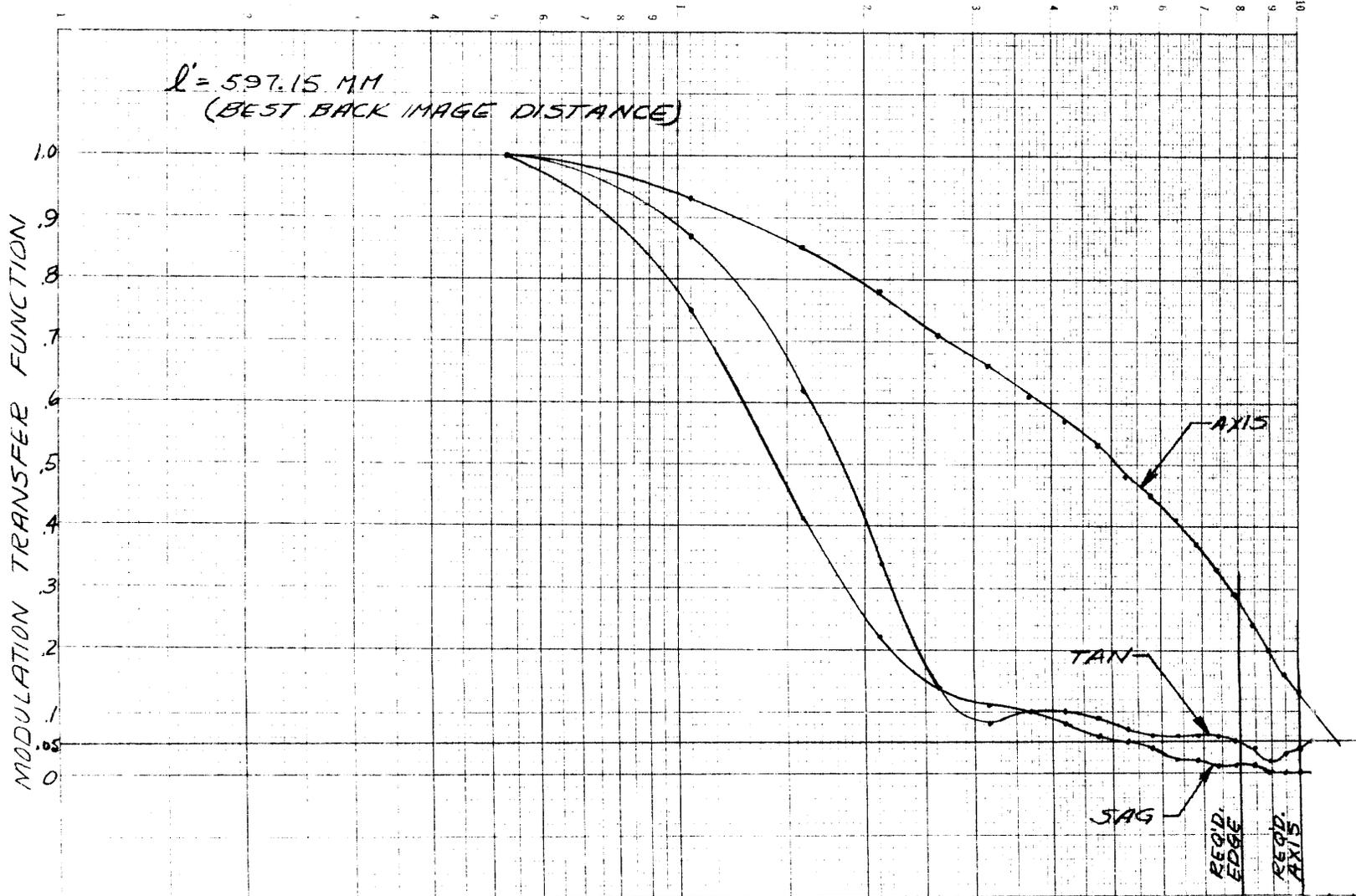
5X 1/2 EDGE 3/4 EDGE



HEIDEL & EBER CO

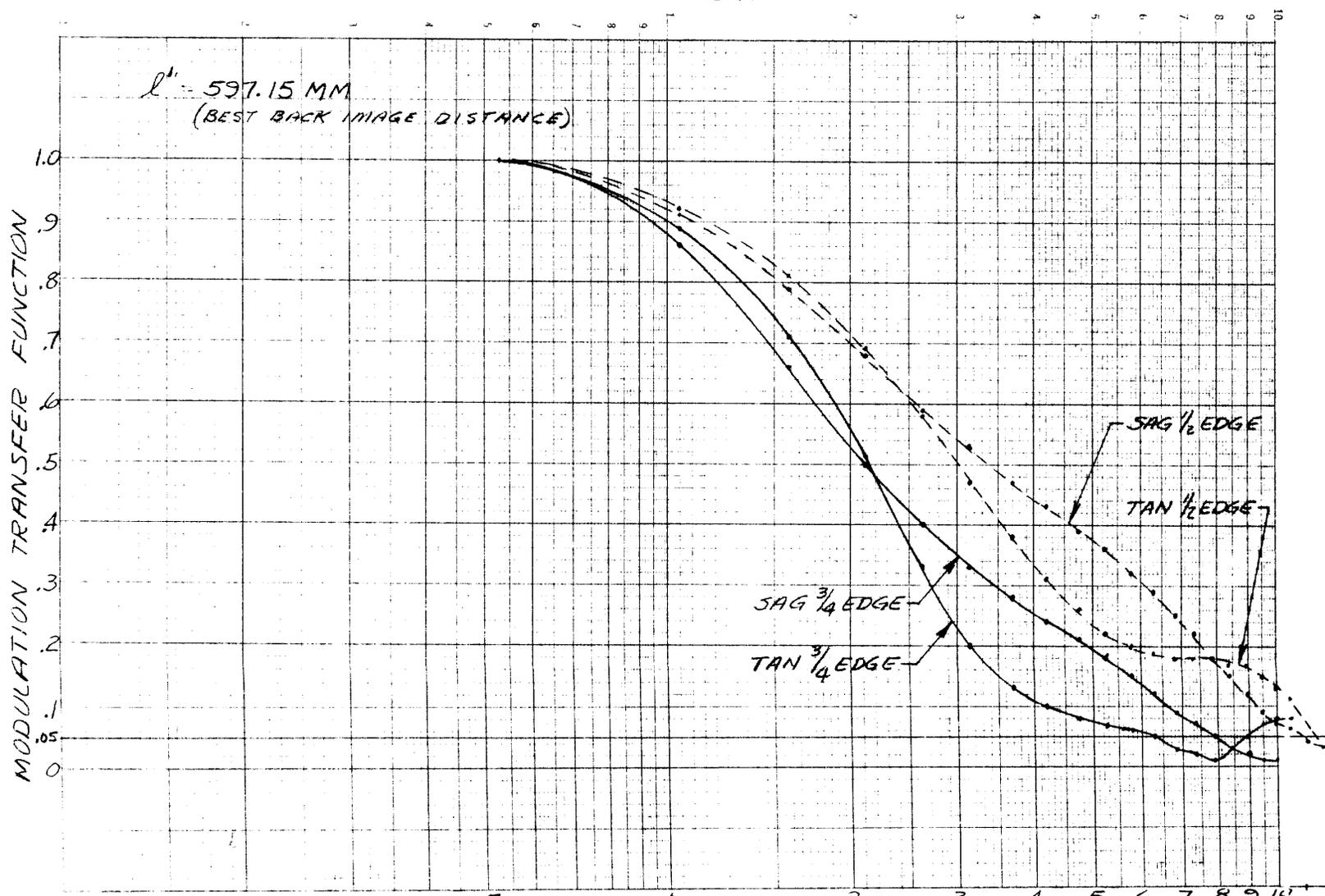
3X AXIS EDGE

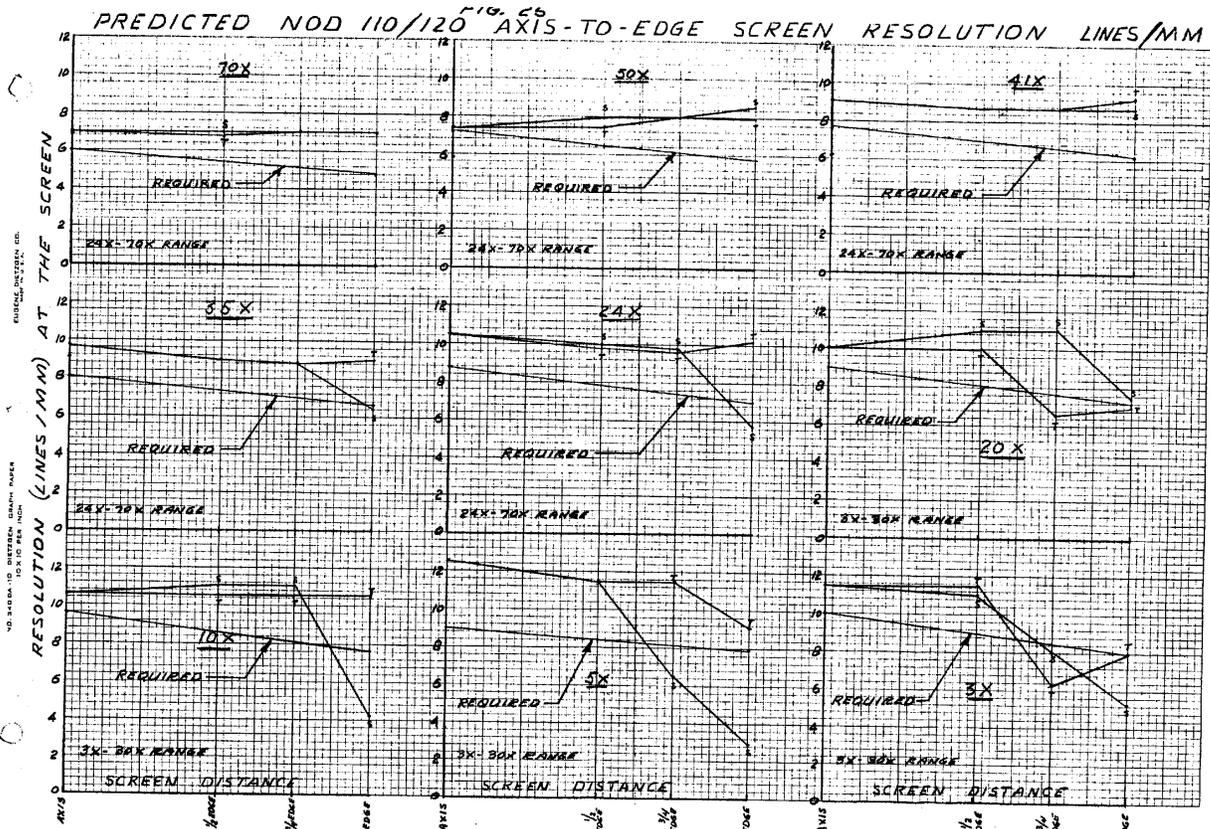
$l' = 597.15 \text{ MM}$
(BEST BACK IMAGE DISTANCE)



3X 1/2 EDGE 3/4 EDGE

$l^* = 597.15 \text{ MM}$
(BEST BACK IMAGE DISTANCE)





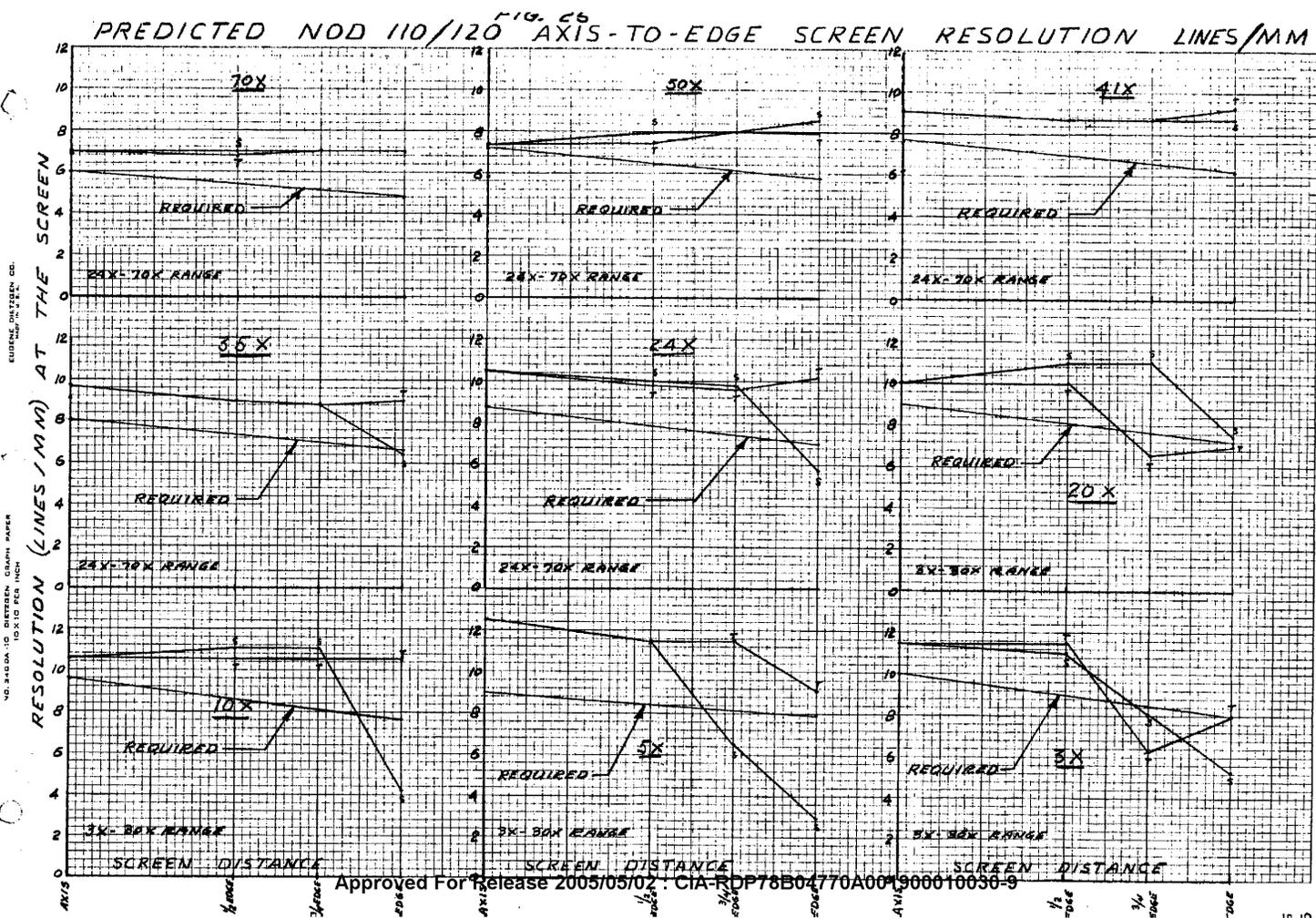
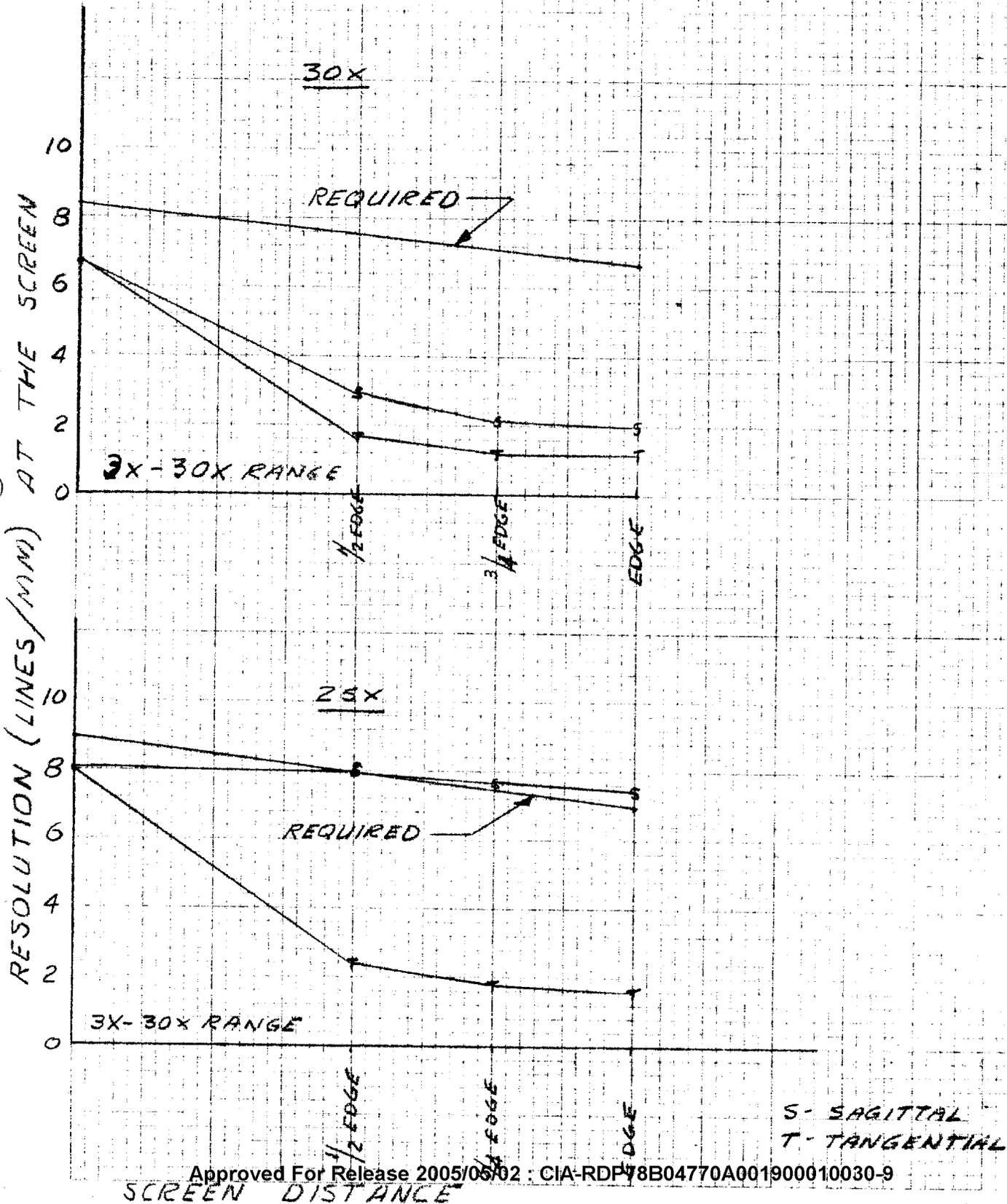


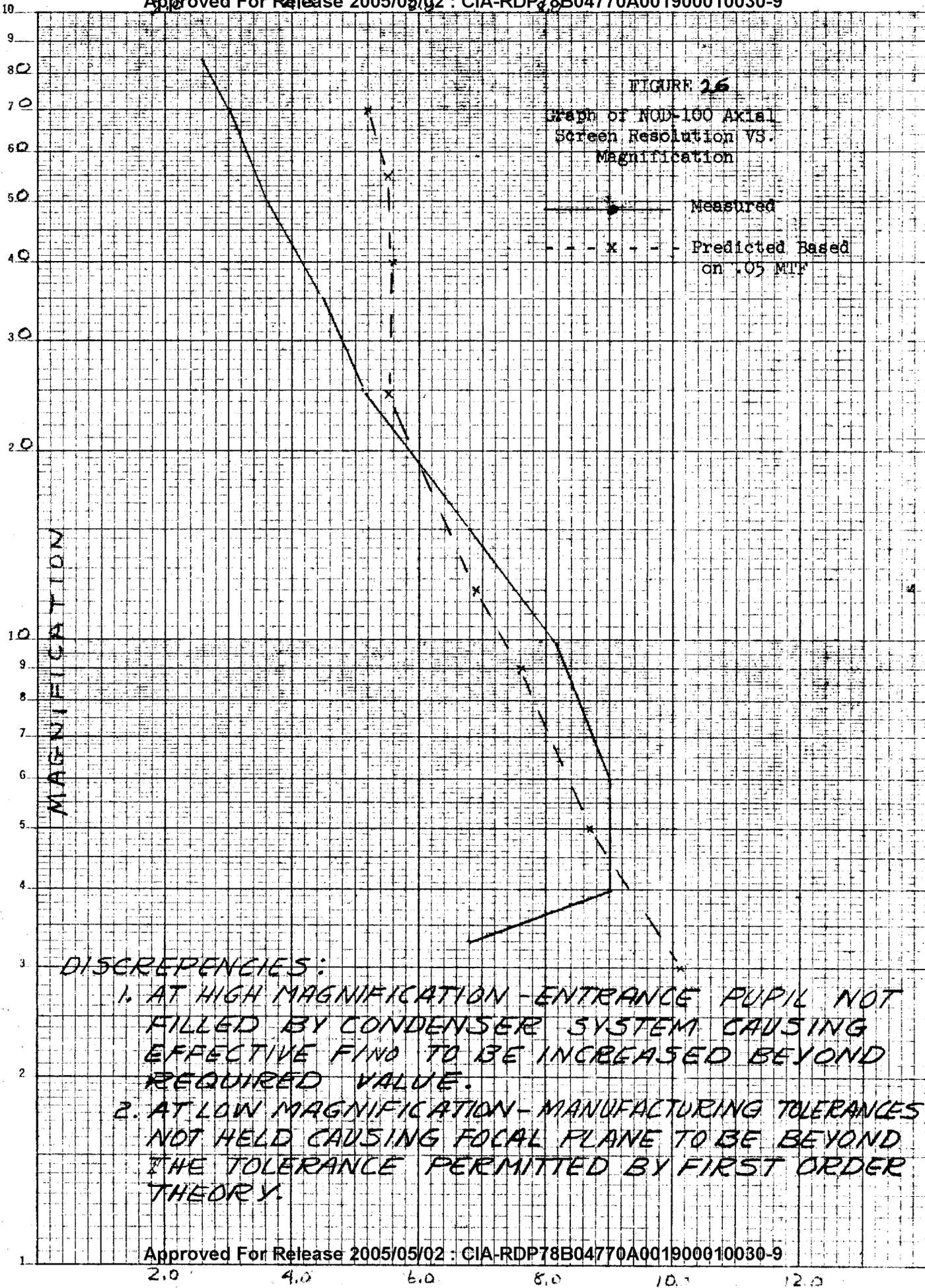
FIG. 25 (CONT'D)

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PREDICTED NOD 110/120 AXIS-TO-EDGE
RESOLUTION LINES/MM



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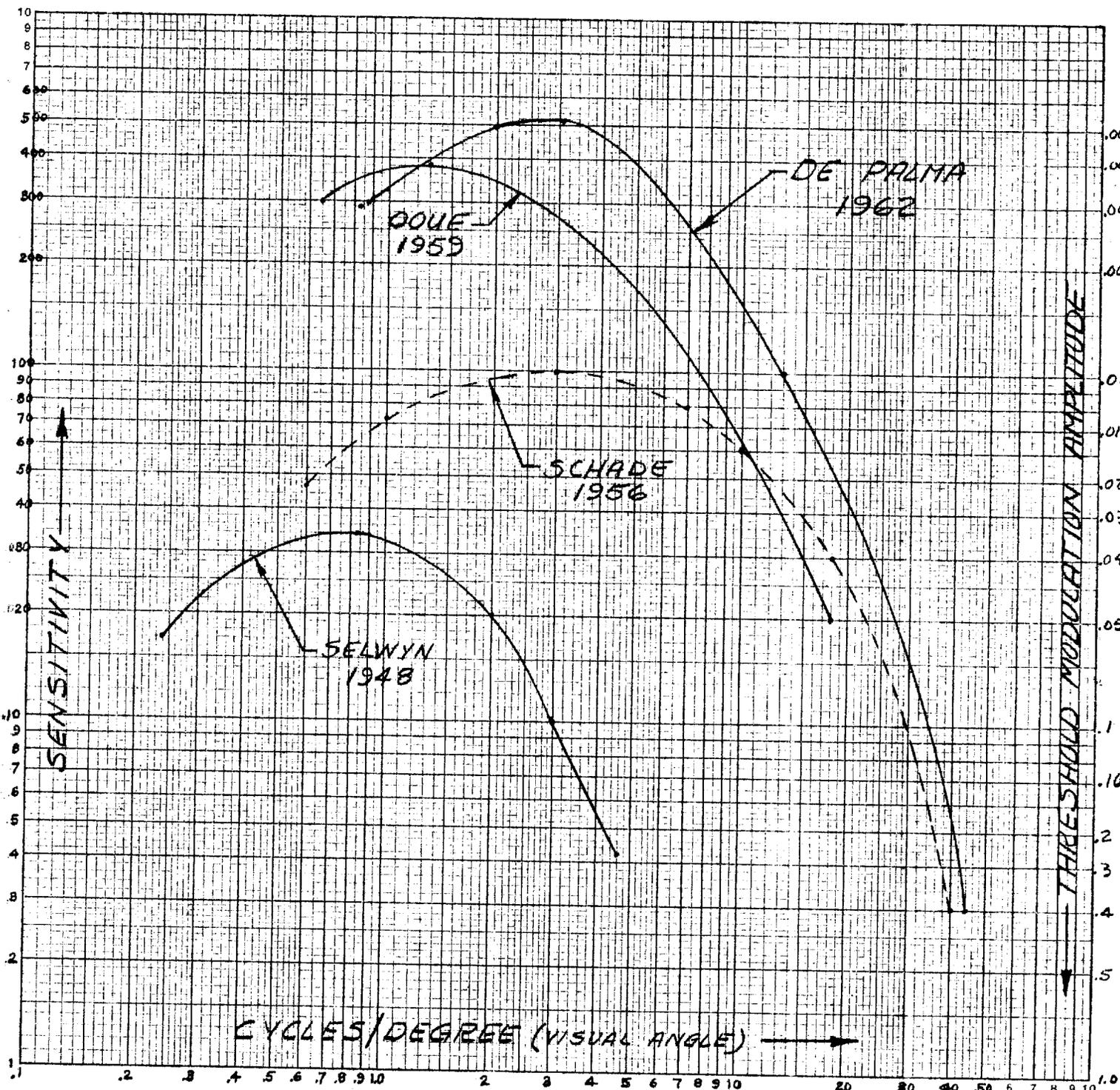


DISCREPANCIES:

1. AT HIGH MAGNIFICATION - ENTRANCE PUPIL NOT FILLED BY CONDENSER SYSTEM CAUSING EFFECTIVE F/NO TO BE INCREASED BEYOND REQUIRED VALUE.
2. AT LOW MAGNIFICATION - MANUFACTURING TOLERANCES NOT HELD CAUSING FOCAL PLANE TO BE BEYOND THE TOLERANCE PERMITTED BY FIRST ORDER THEORY.

K&E SEMI-LOGARITHMIC 46 4973 2 CYCLES X 70 DIVISIONS MADE IN U.S.A. KEUFFEL & ESSER CO.

FIG. 27



COMPARISON OF WHITE LIGHT, SPATIAL RESPONSE OF THE EYE FROM FOUR INDEPENDENT STUDIES.

NUMERICAL APERTURE, F/No and RAYLEIGH

LIMIT REQUIREMENTS FOR NOD 110/120

MAG	F/NO	SCREEN	RAYLEIGH LIMIT	NUMERICAL FILM	APERTURE SCREEN
70	3	210	.012	.167	.002320
50	3.476	173.6	.0139	.1438	.002676
41	3.943	161.663	.01577	.1268	.003092
35	4.415	154.525	.01766	.11325	.003235
30	4.969	149.07	.01988	.100623	.003354
25	5.756	143.9	.02302	.0869	.003474
24	5.957	142.968	.02383	.08393	.003497
20	6.957	139.14	.02783	.07187	.003593
15	8.981	134.715	.03592	.05567	.003711
10	13.043	130.43	.05217	.03833	.003833
9.76	13.345	130.247	.05338	.037467	.003838
7.95	16.196	128.758	.06478	.030871	.003883
5	25.285	126.425	.1011	.01977	.003954
3.7	33.911	125.4707	.1356	.01474	.003984
3.3	37.956	125.2548	.1518	.01317	.003991
3.16	39.597	125.1265	.1584	.012627	.003995
3	41.635	124.905	.1665	.01201	.004003

Rayleigh Limit (in μ) = $4 * F/No$

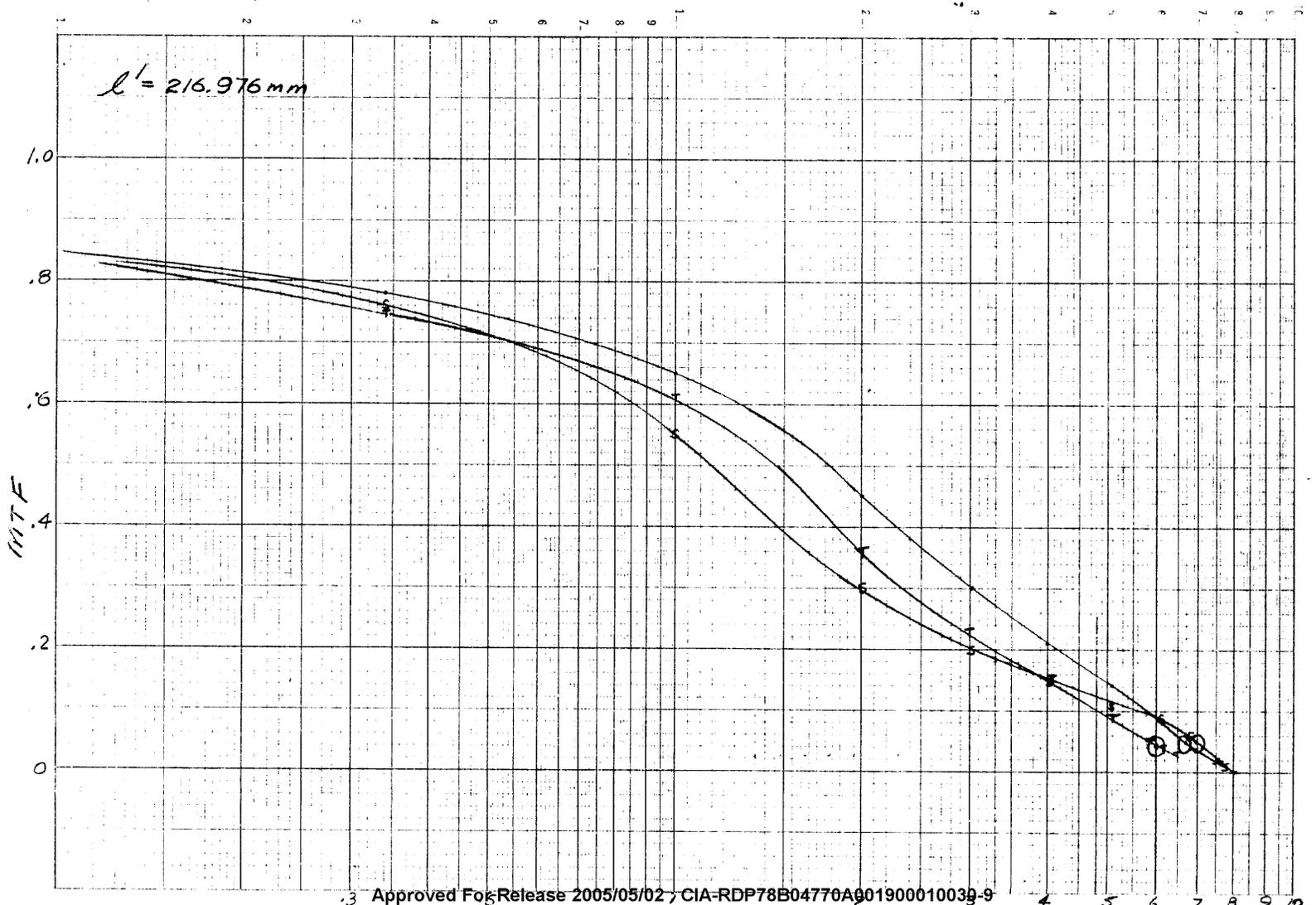
K&E SEMI-LOGARITHMIC 46 4973
2 CYCLES X 70 DIVISIONS MADE IN U.S.A.

Approved For Release 2005/05/02 : CIA-RDP78B04770A001900010039-9

70X

HETERCHROMATIC

$l' = 216.976 \text{ mm}$



Approved For Release 2005/05/02 : CIA-RDP78B04770A001900010039-9

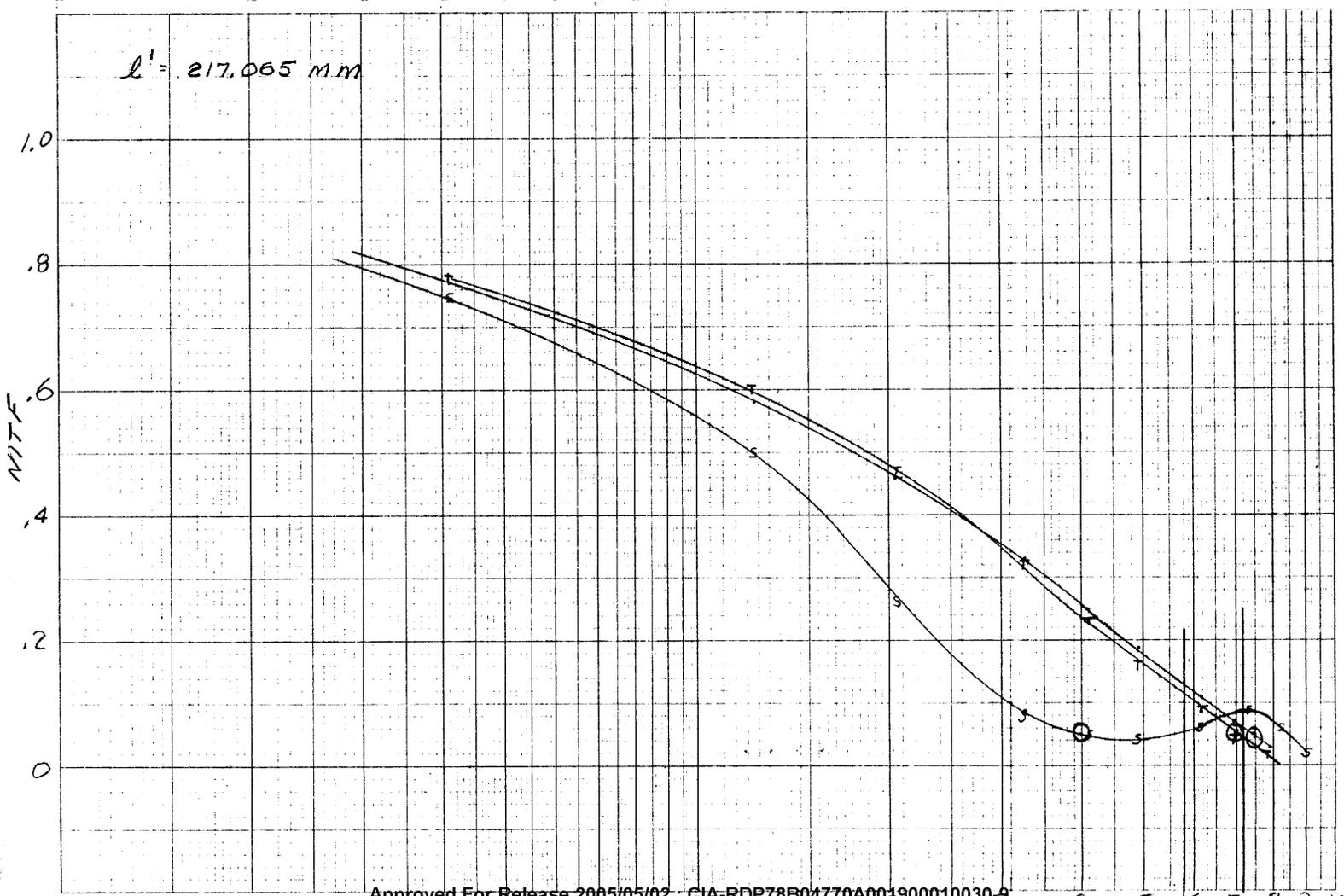
SCREEN RESOLUTION LINES/MM

KM SEMI-LOGARITHMIC 46 4973
2 CYCLES X 70 DIVISIONS MADE IN U.S.A.

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SEMILOGARITHMIC

$l' = 217.065 \text{ mm}$



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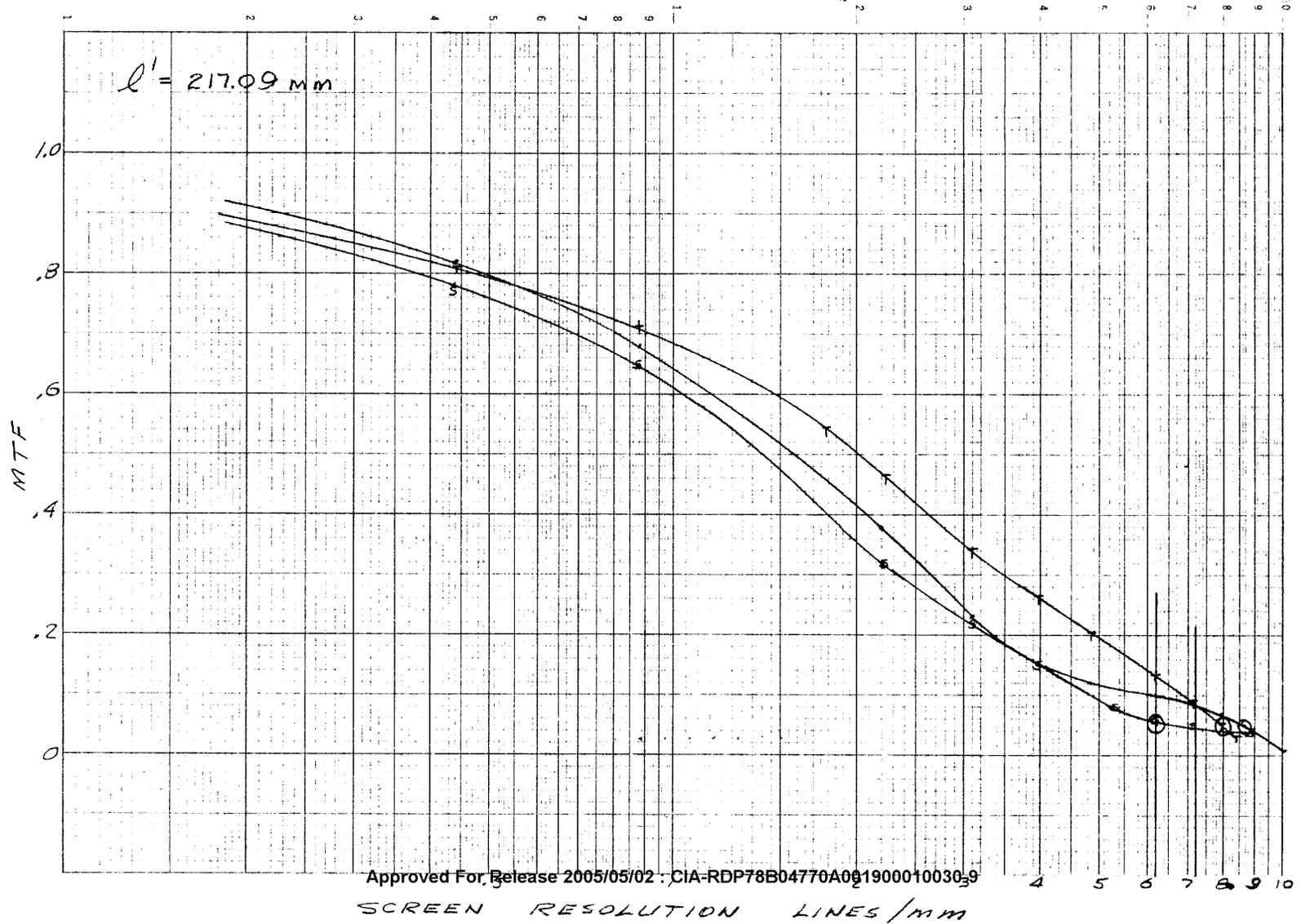
RESOLUTION AT SCREEN LINES/MM

K&M SEMI-LOGARITHMIC 46 4973
2 CYCLES X 70 DIVISIONS MADE IN U. S. A.

Approved For Release 2005/05/02 : CIA-RDP78B04770A001900010030-9

APX HETEROCROMATIC

$l' = 217.09 \text{ mm}$



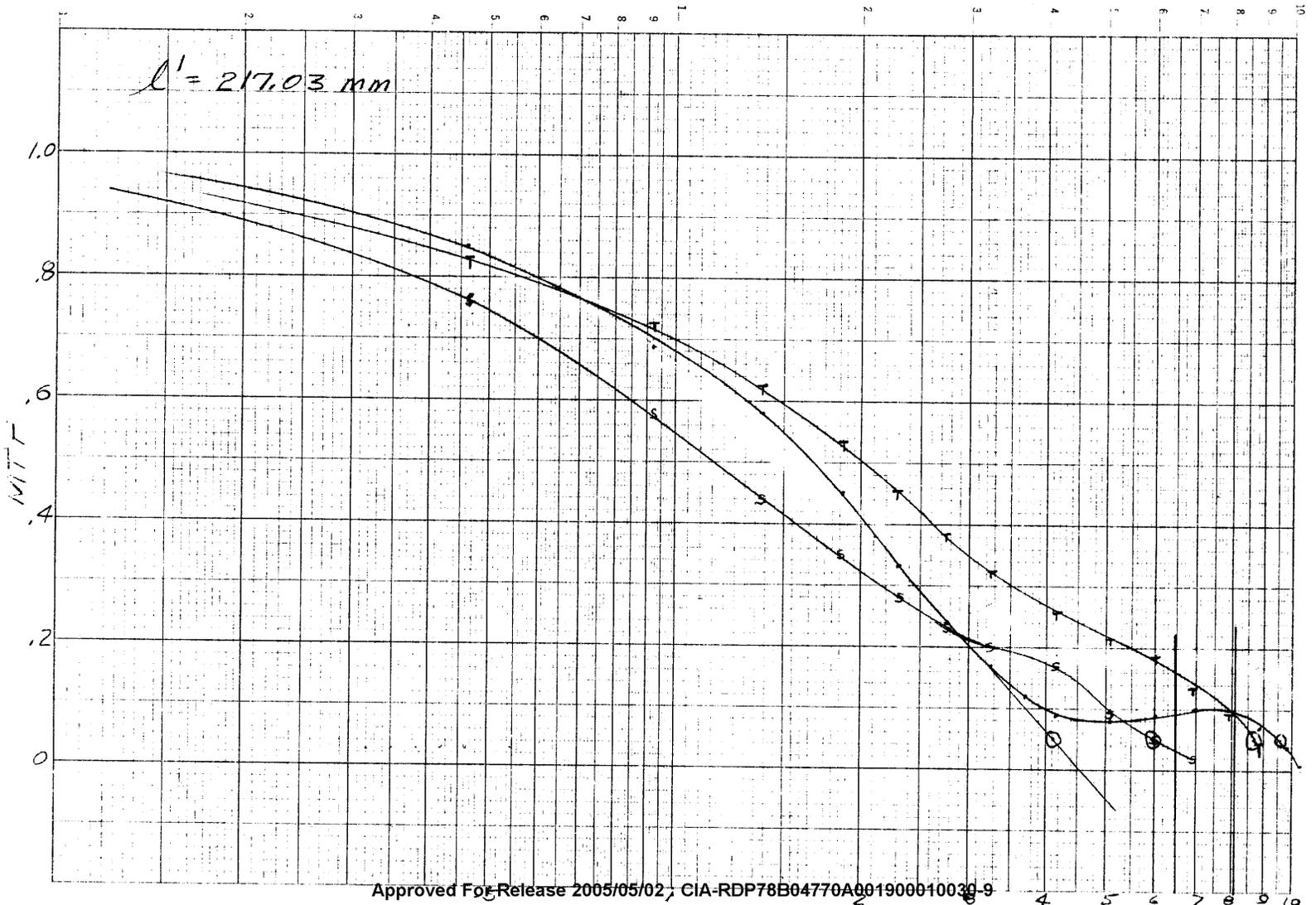
Approved For Release 2005/05/02 : CIA-RDP78B04770A001900010030-9

SCREEN RESOLUTION LINES / MM

K&E SEMI-LOGARITHMIC 46 4973
3 CYCLES X 70 DIVISIONS MADE IN U.S.A.

Approved For Release 2005/05/02 : CIA-RDP78B04770A001900010030-9

35X HETERCHROMATIC



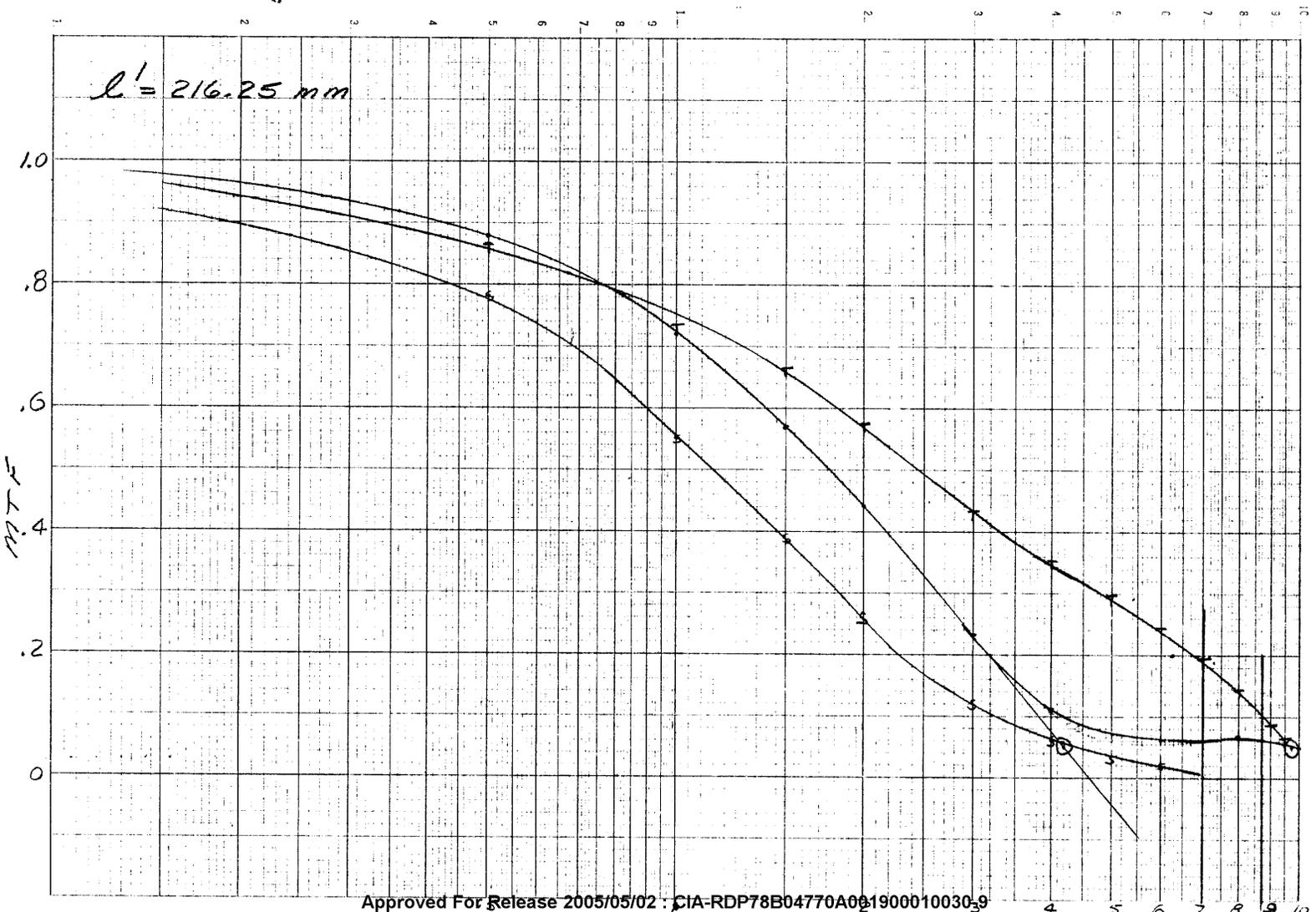
Approved For Release 2005/05/02 : CIA-RDP78B04770A001900010030-9

RESOLUTION AT SCREEN LINES/MM

K&M SEMI-LOGARITHMIC 46 4973
2 CYCLES X 70 DIVISIONS MADE IN U.S.A.

Approved For Release 2005/05/02 : CIA-RDP78B04770A001900010030-9

24X HETEROCHEMATIC



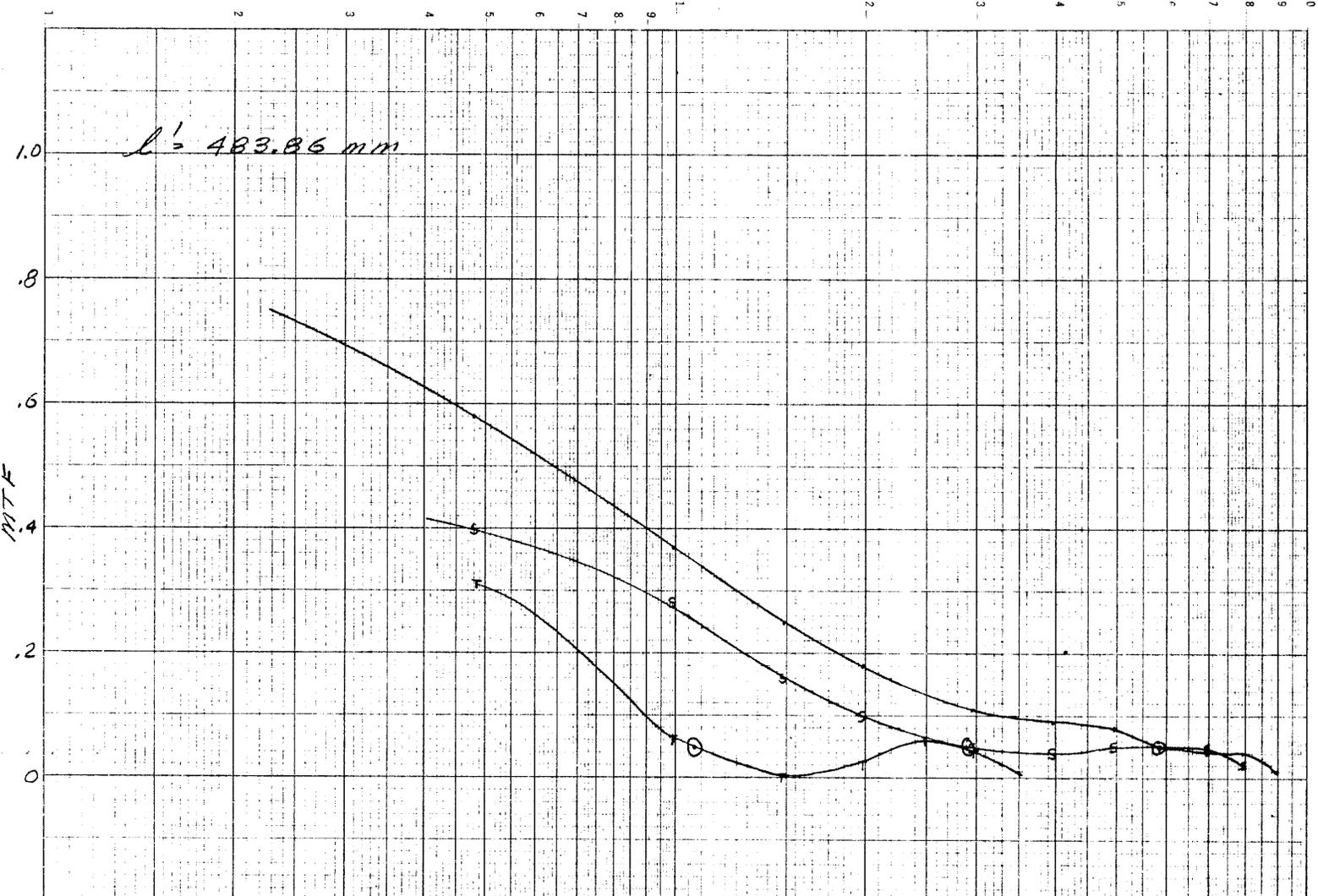
Approved For Release 2005/05/02 : CIA-RDP78B04770A001900010030-9

RESOLUTION AT SCREEN LINES/MM

K&M SEMI-LOGARITHMIC 46 4973
2 CYCLES X 70 DIVISIONS MADE IN U.S.A.

Approved For Release 2005/05/02 : CIA-RDP78B04770A001900010030-9

25X HETERCHROMATIC



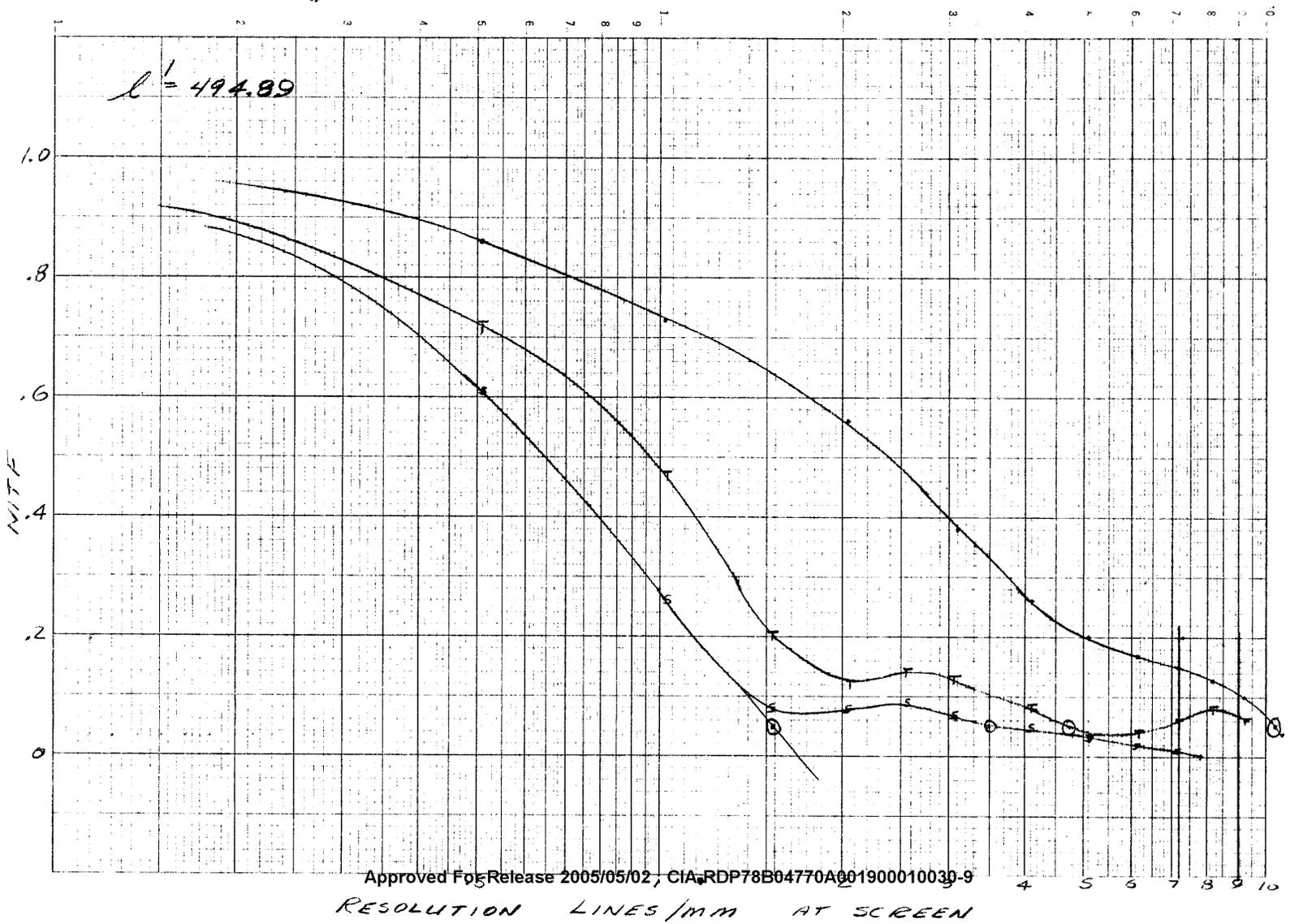
Approved For Release 2005/05/02 : CIA-RDP78B04770A001900010030-9

RESOLUTION LINES /MM AT SCREEN

K&E SEMI-LOGARITHMIC 46 4873
2 CYCLES X 70 DIVISIONS MADE IN U.S.A.

Approved For Release 2005/05/02 : CIA-RDP78B04770A001900010030-9

20X HETEROCROMATIC

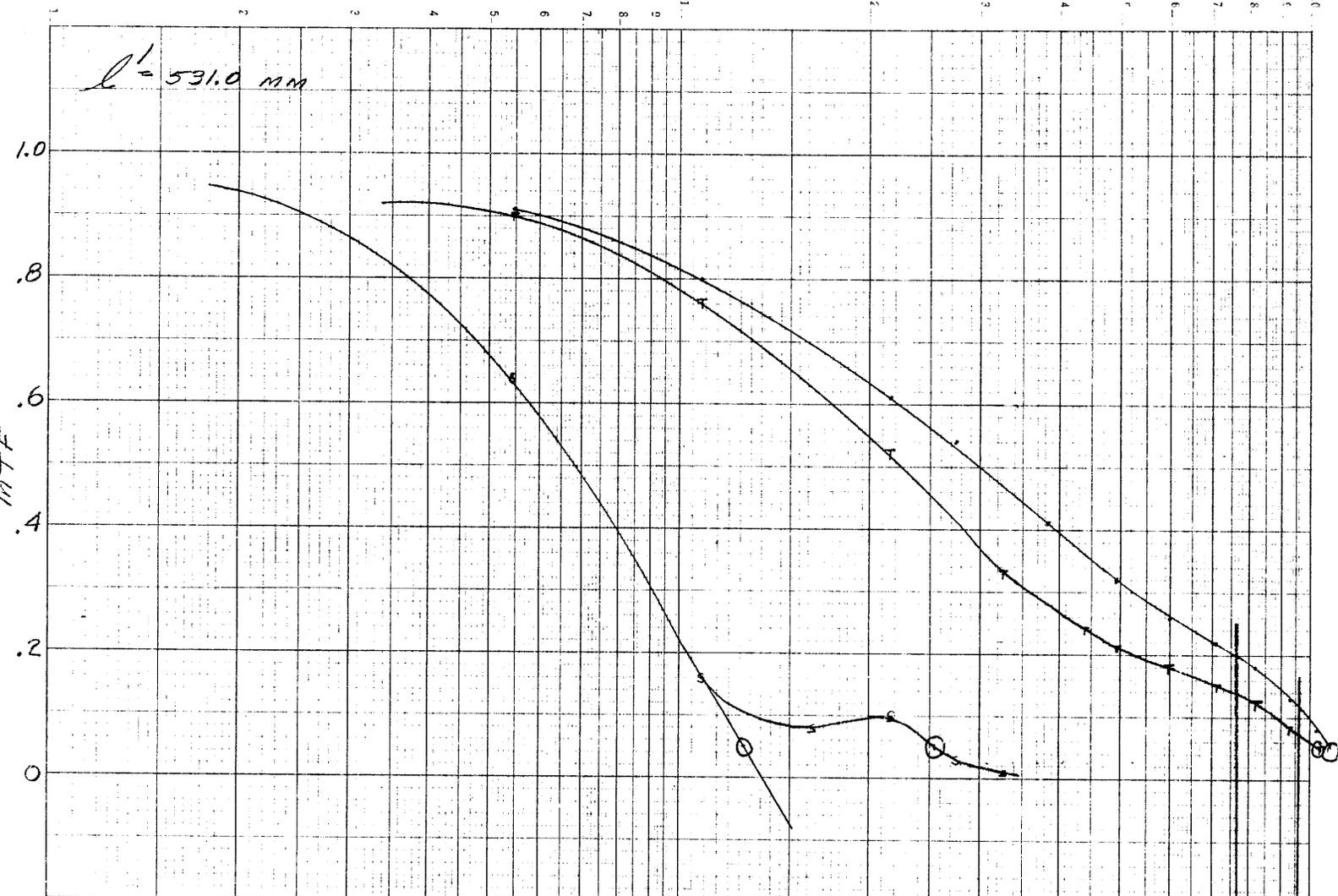


K&M SEMI-LOGARITHMIC 46 4973
2 CYCLES X 70 DIVISIONS MADE IN U.S.A.

Approved For Release 2005/05/02 : CIA-RDP78B04770A001900010030-9

9.76 X HETERCHROMATIC

$l' = 531.0 \text{ mm}$



Approved For Release 2005/05/02 : CIA-RDP78B04770A001900010030-9

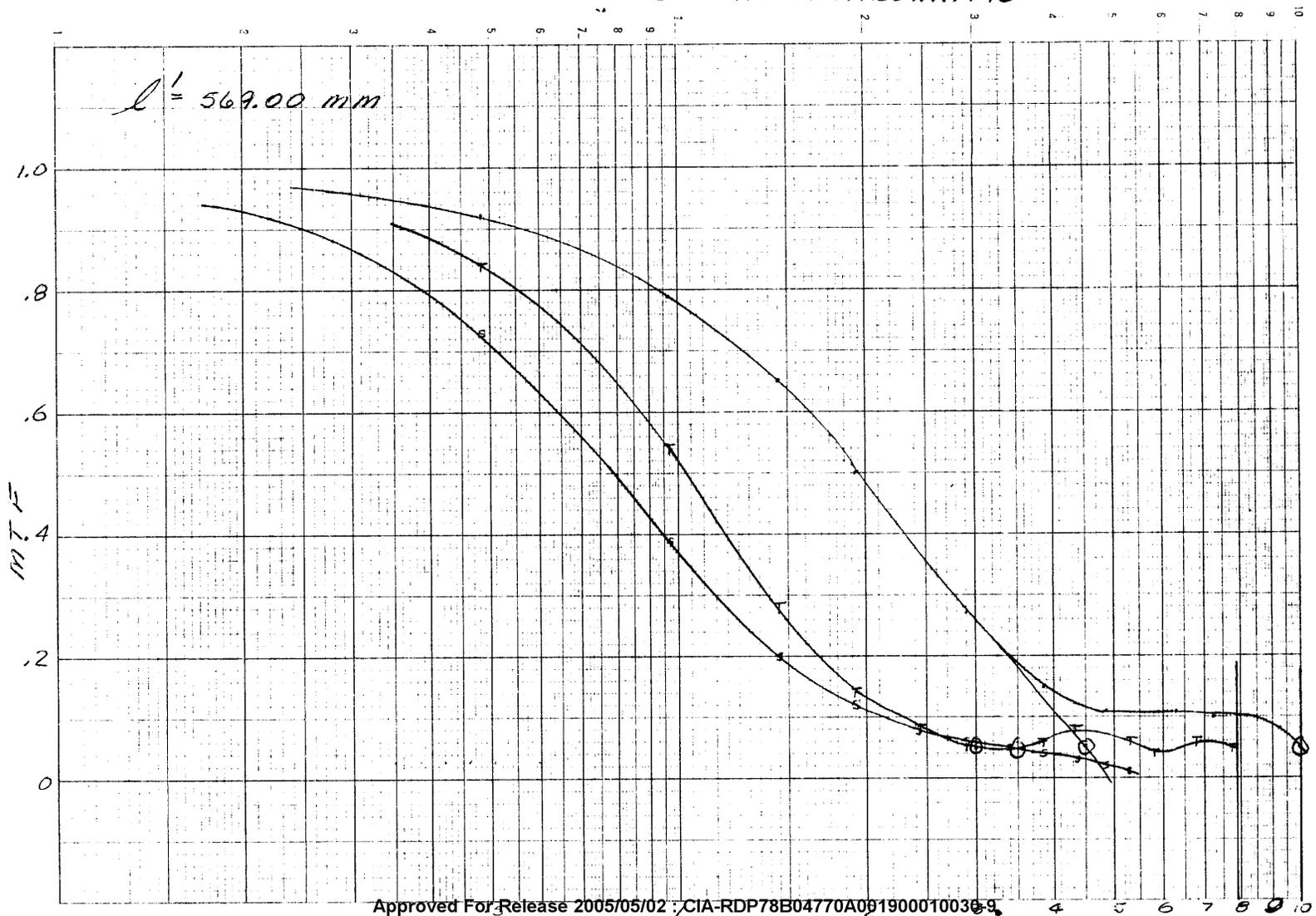
RESOLUTION LINES/MM AT SCREEN

K&M SEMI-LOGARITHMIC 46 4973
3 CYCLES X 70 DIVISIONS MADE IN U.S.A.

Approved For Release 2005/05/02 : CIA-RDP78B04770A001900010030-9

5 X TELECHROMATIC

$l' = 569.00 \text{ mm}$



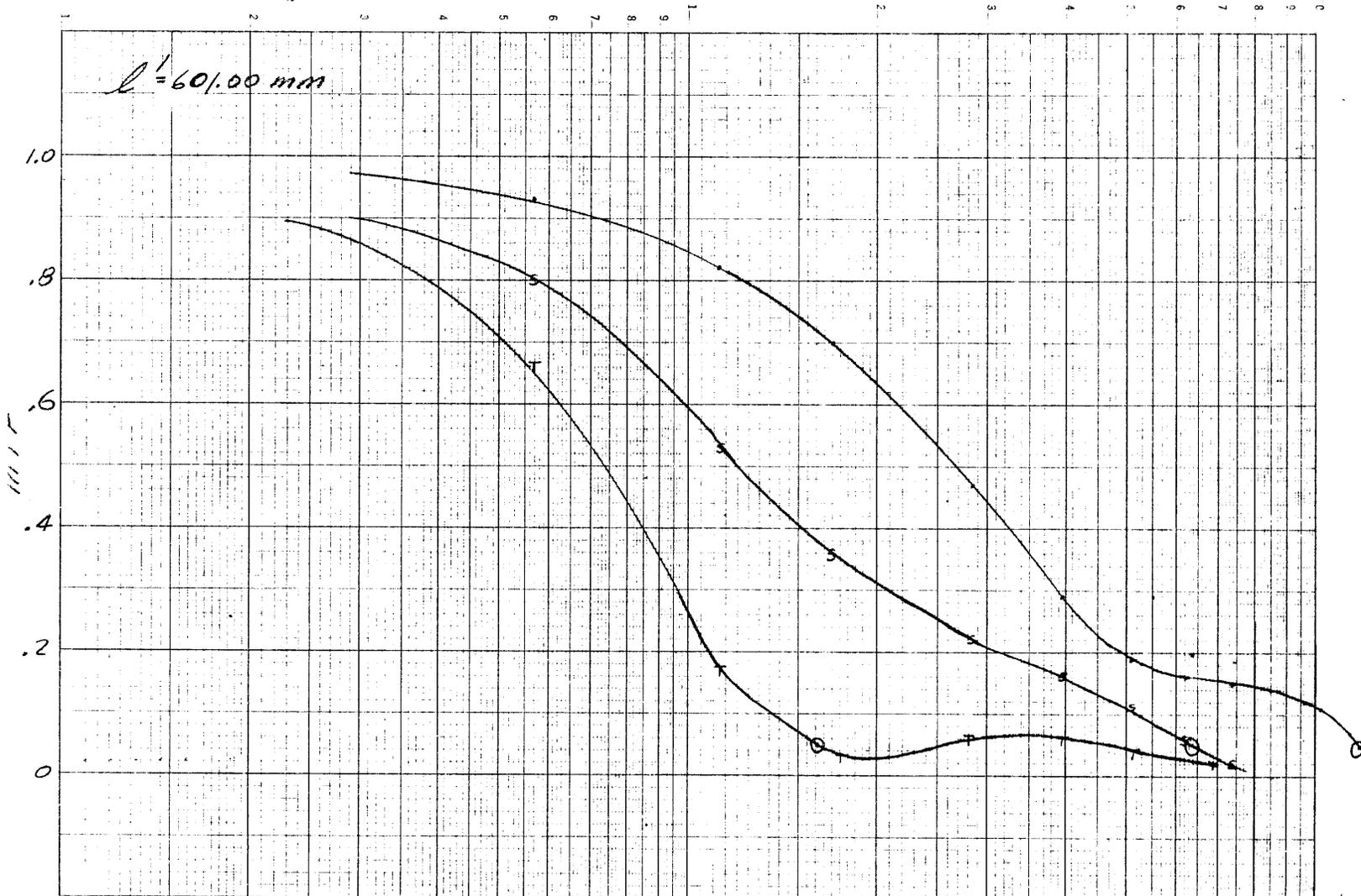
Approved For Release 2005/05/02 : CIA-RDP78B04770A001900010030-9

RESOLUTION LINES/MPA AT SCREEN

K&E SEMI-LOGARITHMIC 46 4973
2 CYCLES X 70 DIVISIONS MADE IN U.S.A.

Approved For Release 2005/05/02 : CIA-RDP78B04770A001900010030-9

3X HETERCHROMATIC

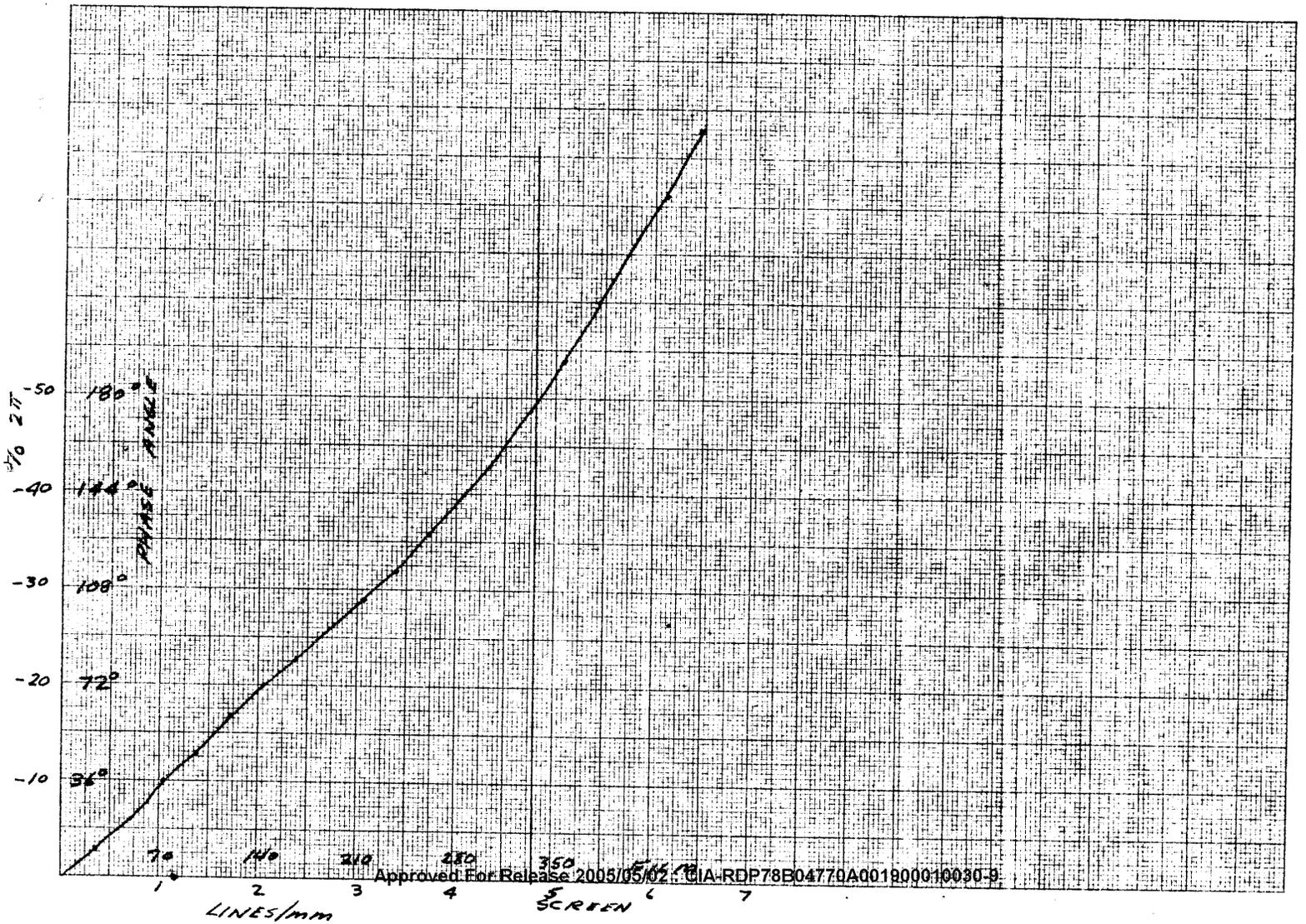


Approved For Release 2005/05/02 : CIA-RDP78B04770A001900010030-9

RESOLUTION LINES/MM AT SCREEN

10 X 10 TO THE CENTIMETER 46 1512
10 X 25 CM

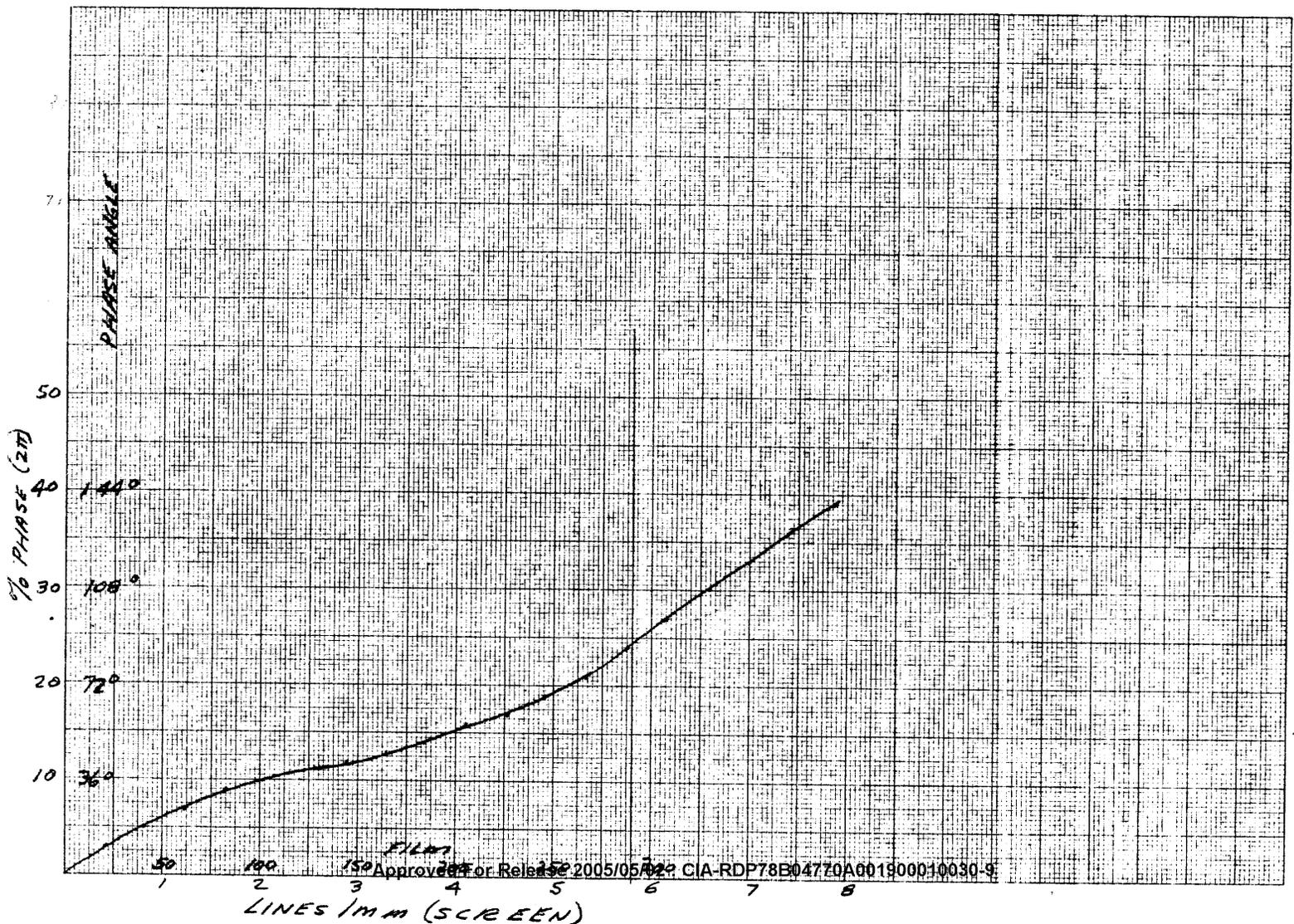
Approved For Release 2005/05/02 : CIA-RDP78B04770A001900010030-9



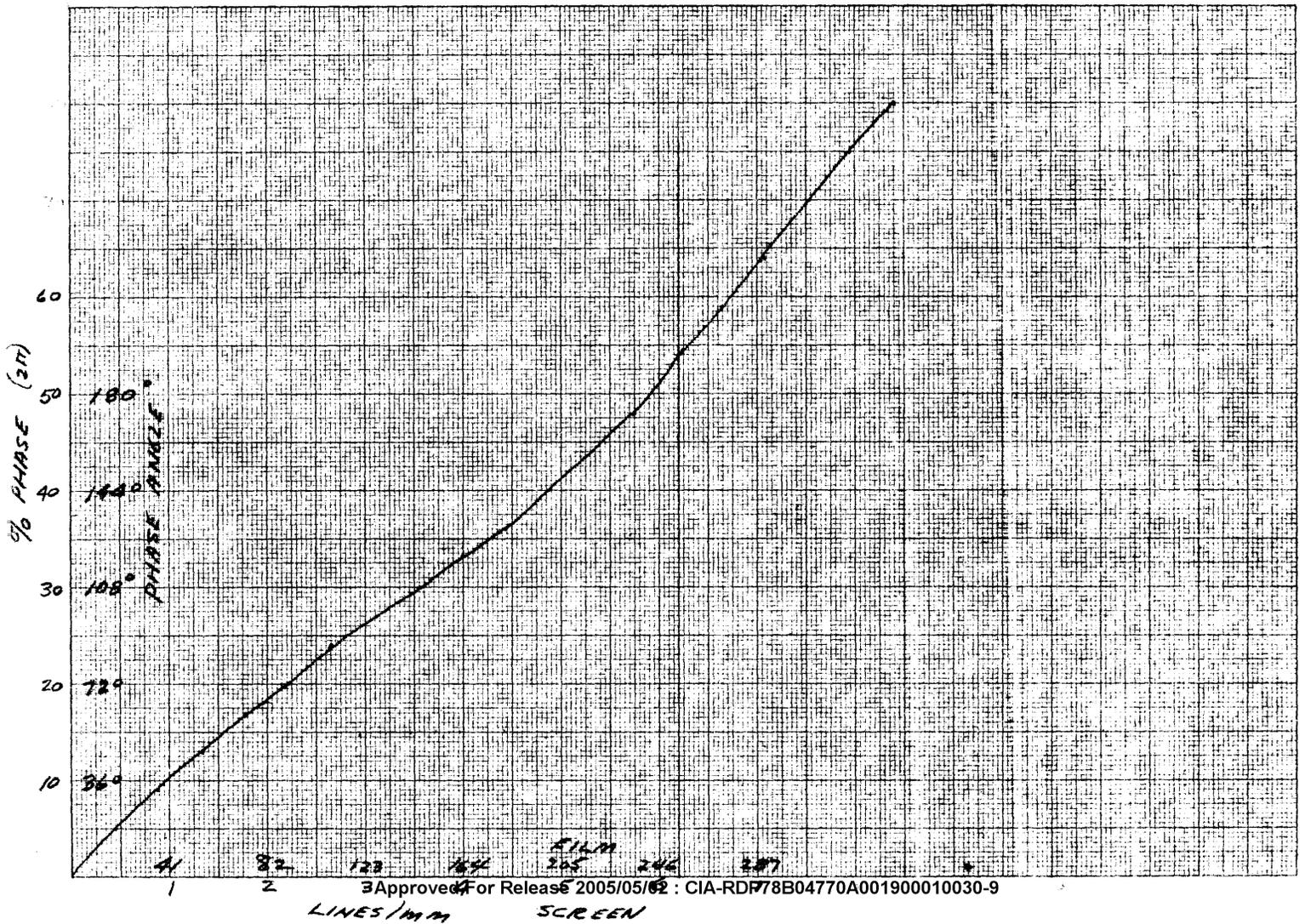
Approved For Release 2005/05/02 : CIA-RDP78B04770A001900010030-9

K&E 10 X 10 TO THE CENTIMETER 46 1512
10 X 25 CM

Approved For Release 2005/05/02 : CIA-RDP78B04770A001900010030-9

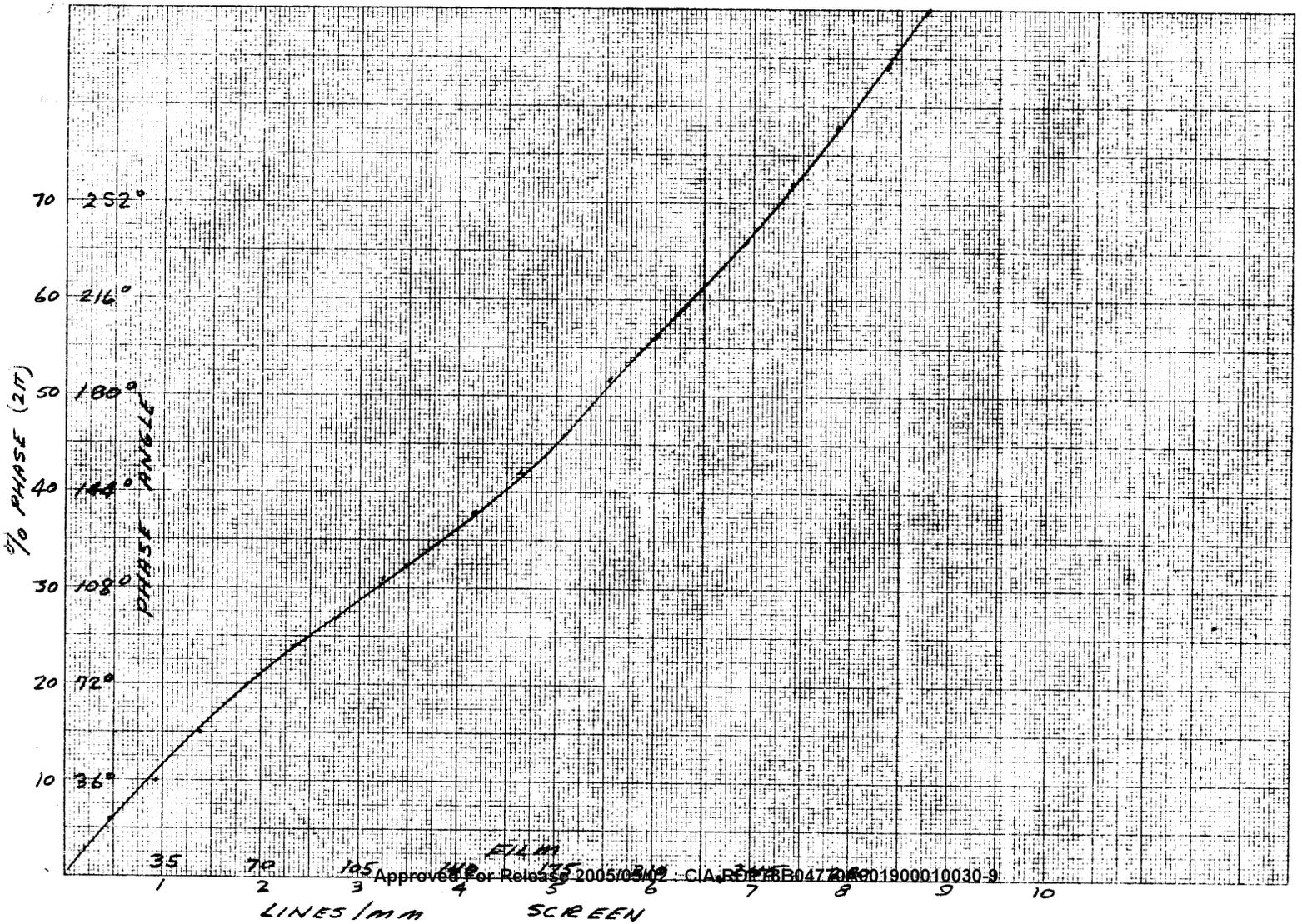


41X PHASE



10 X 10 TO THE CENTIMETER 4G 1512
KEIFFEL & ESSER CO. MADE IN U.S.A.

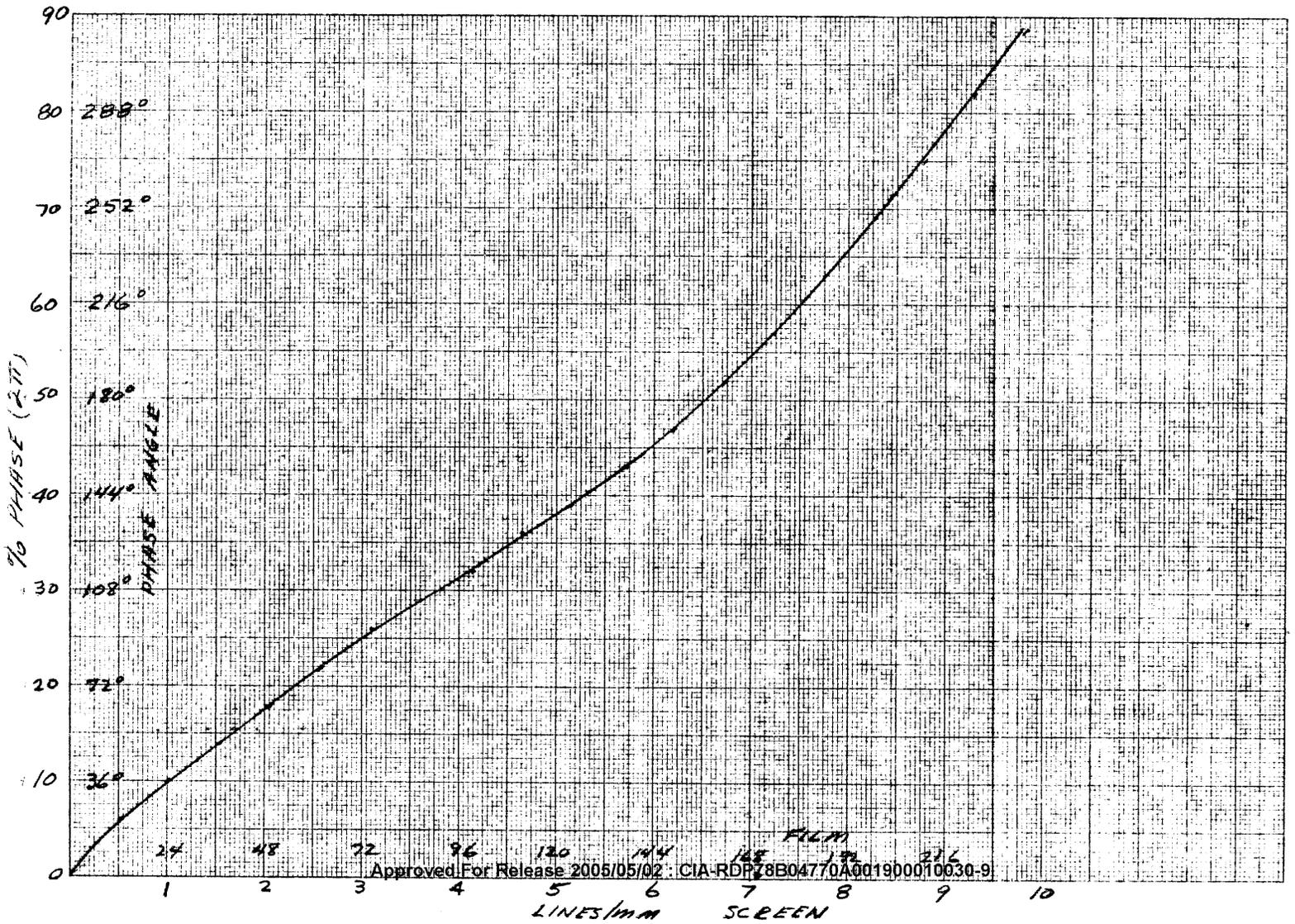
Approved For Release 2005/05/02 : CIA-RDP78B04720A001900010030-9



10 X 10 TO THE CENTIMETER 46 1512
10 X 25 CM. MADE IN U.S.A.

24X PHASE

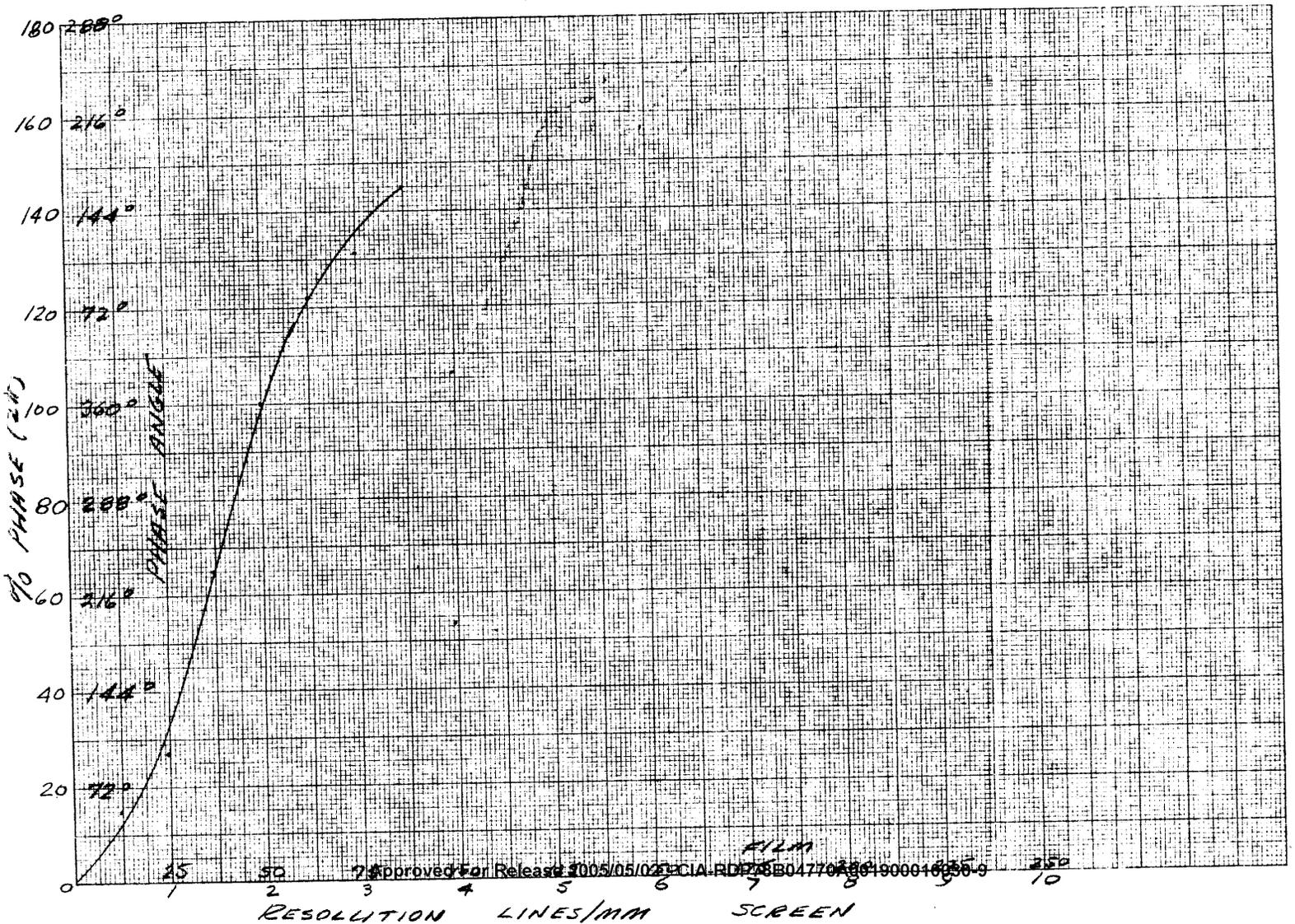
Approved For Release 2005/05/02 : CIA-RDP78B04770A001900010030-9



Approved For Release 2005/05/02 : CIA-RDP78B04770A001900010030-9

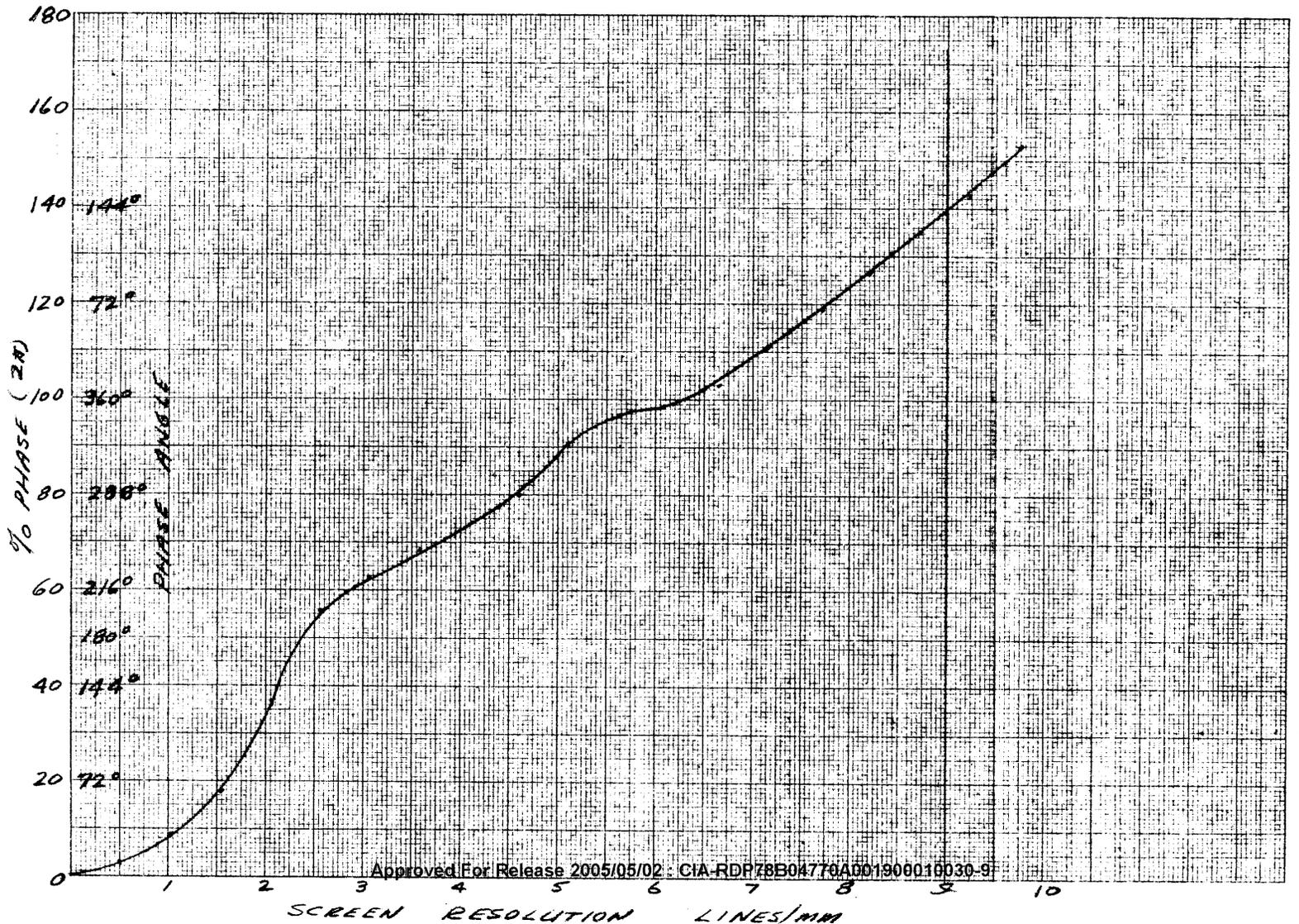
K&M 10 X 10 TO THE CENTIMETER 46 1512
1 IN X 2 1/2 IN. MADE IN U.S.A.

Approved For Release 2005/05/02 : CIA-RDP78B04770A901900010030-9



KΣ 10 X 10 TO THE CENTIMETER 46 1512
16 X 25 CM. MADE IN U.S.A.

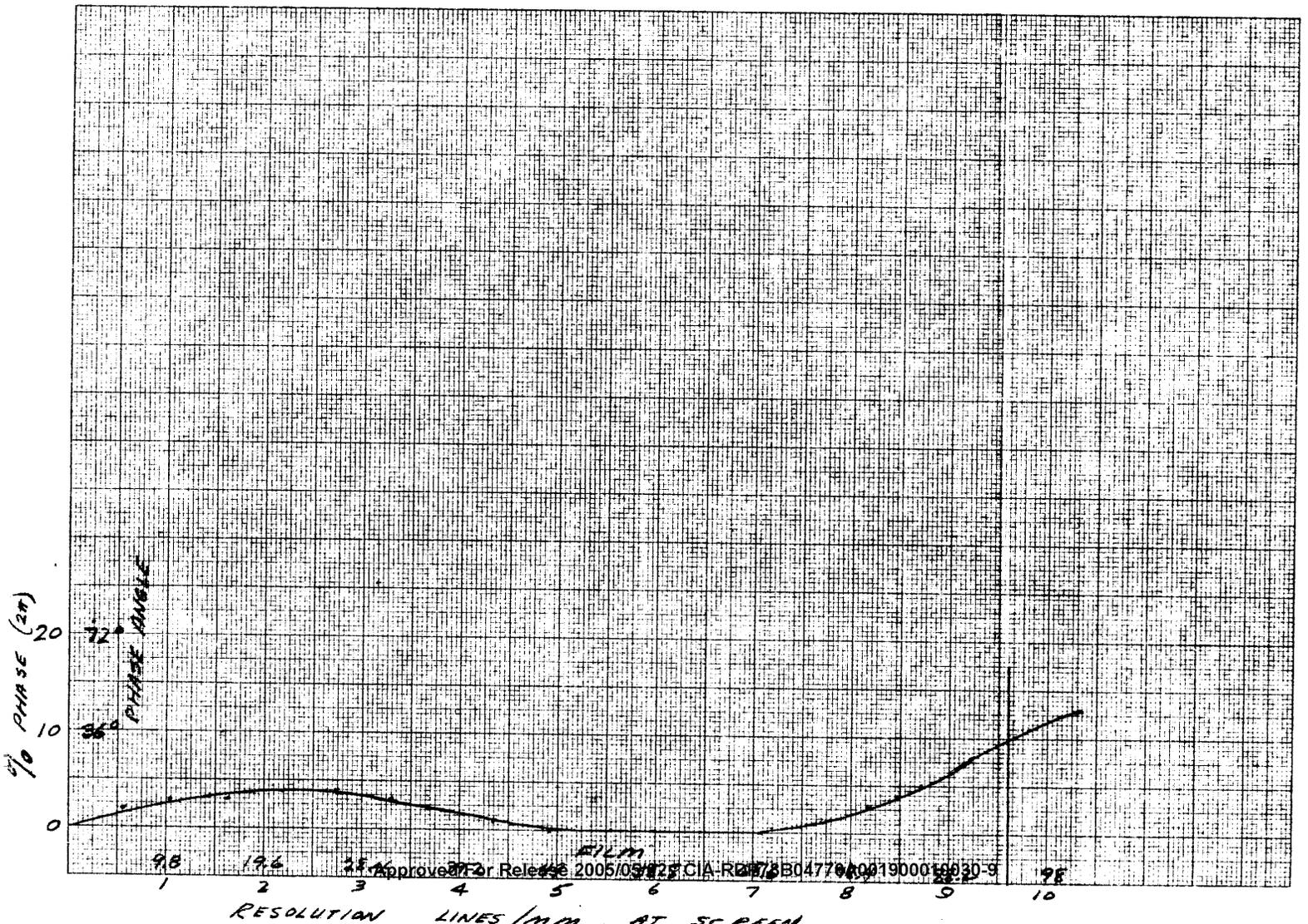
Approved For Release 2005/05/02 : CIA-RDP78B04770A001900010030-9
20X PHASE



Approved For Release 2005/05/02 : CIA-RDP78B04770A001900010030-9

KE 10 X 10 TO THE CENTIMETER 46 1512
18 X 25 CM. MADE IN U.S.A.

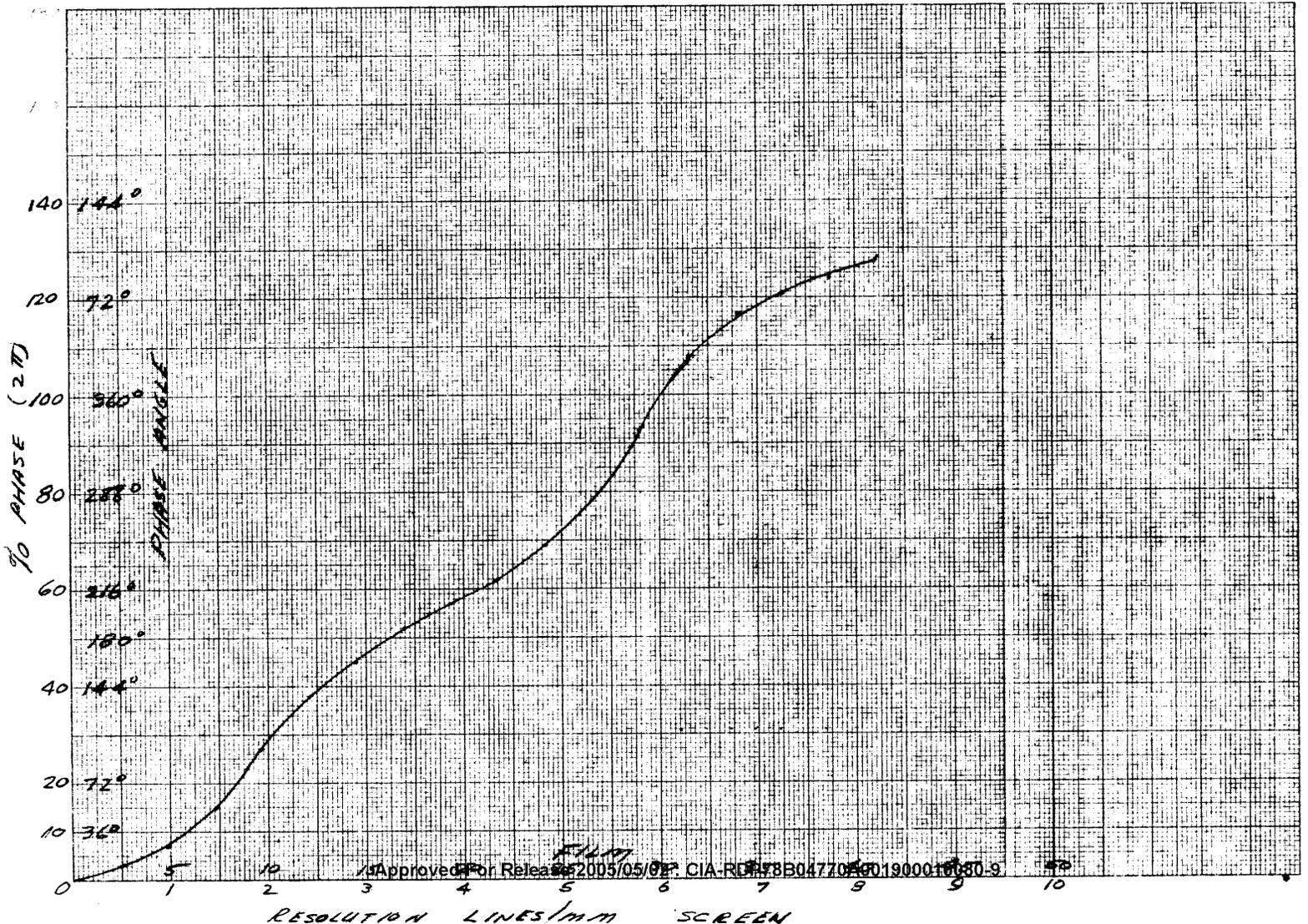
976X PHASE
Approved For Release 2005/05/02 : CIA-RDP78B04770A001900010030-9



KM 10 X 10 TO THE CENTIMETER 46 1512
10 X 2.5 CM. -10 IN U.S.A.

Approved For Release 2005/05/02 : CIA-RDP78B04770A001900010030-9

5X PHASE



Approved For Release 2005/05/02 : CIA-RDP78B04770A001900010030-9

FIGURE 2
Graph of Predicted
NOD 110 (Run 112-10)
Axial Screen Resolution

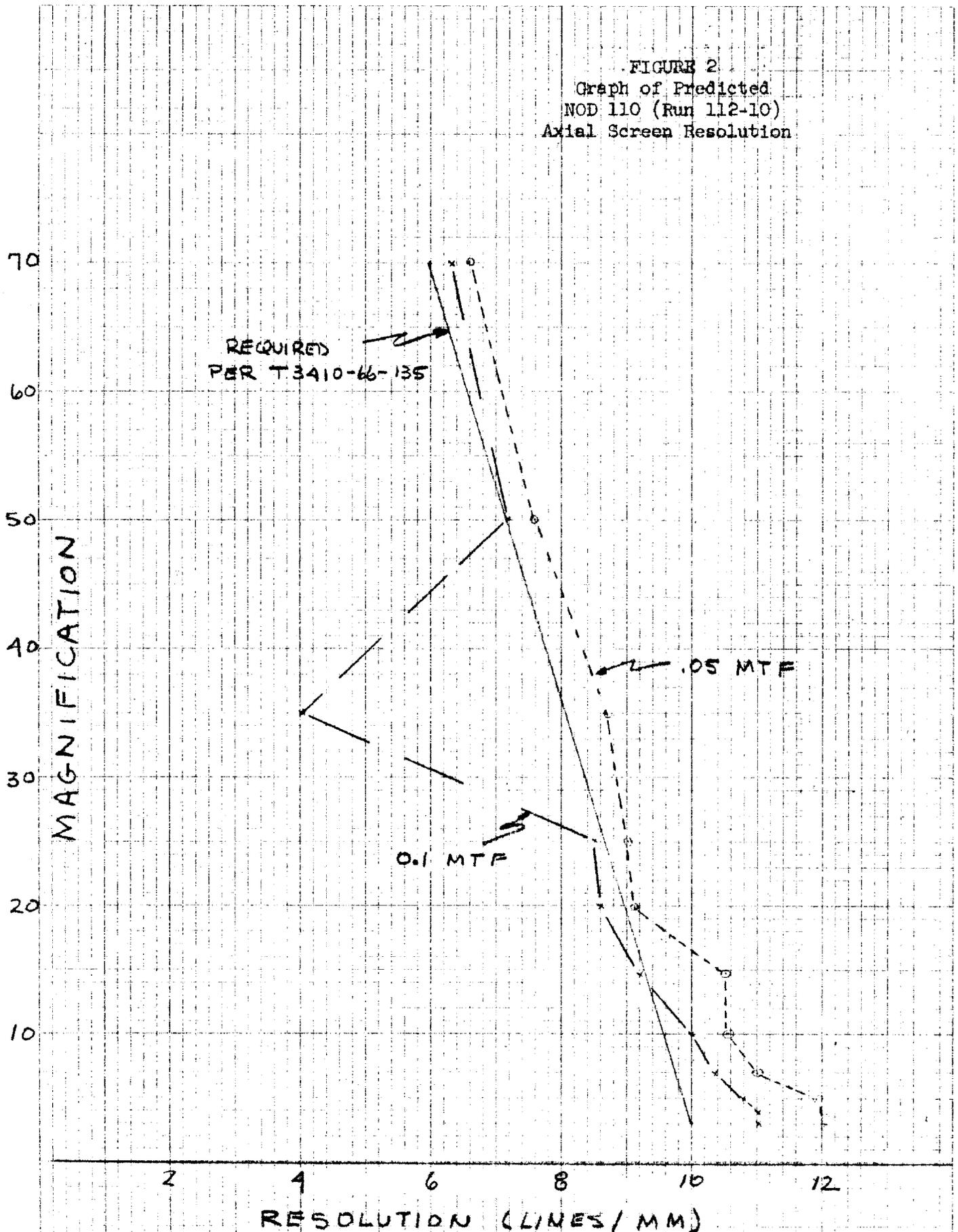
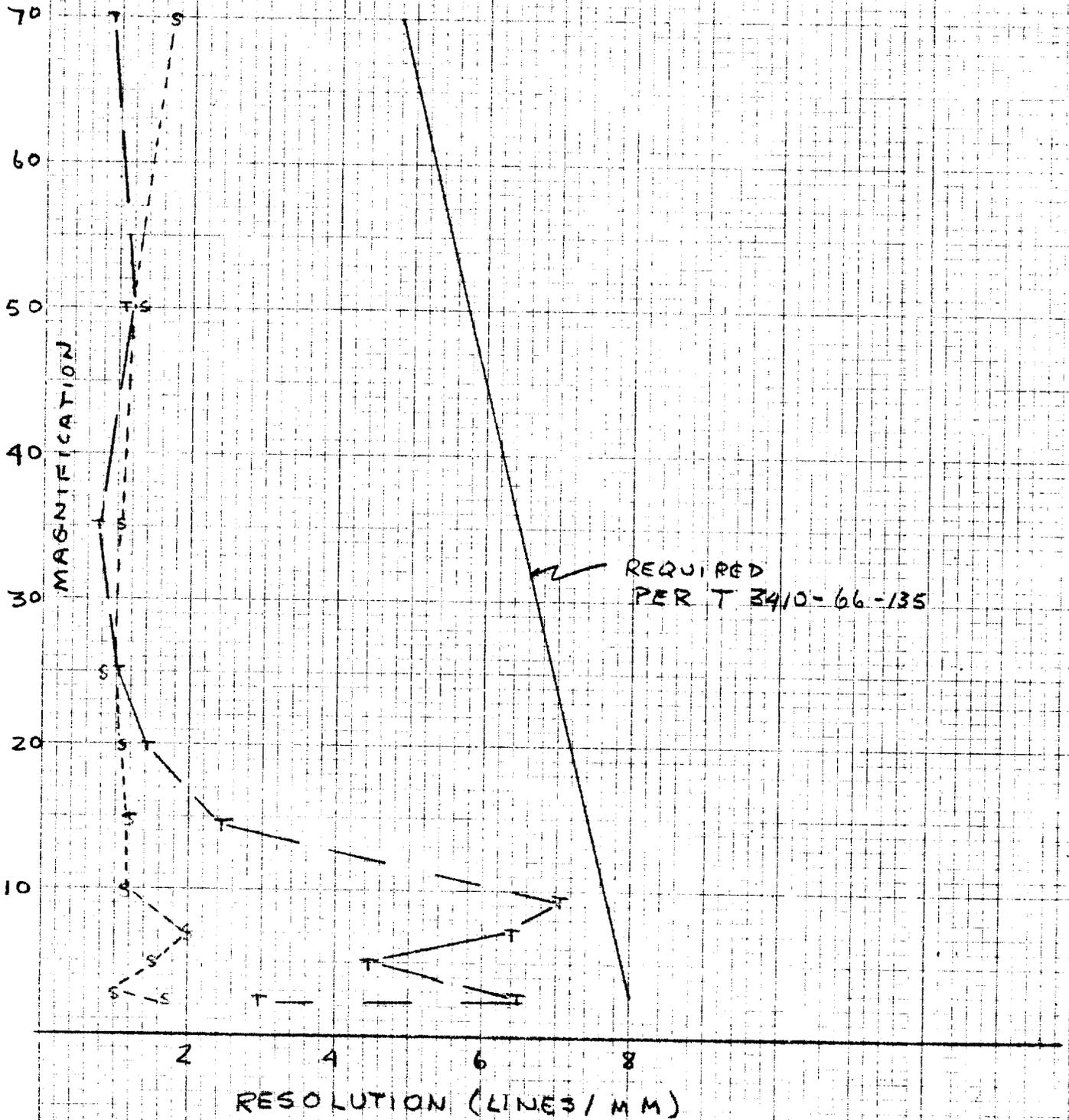


FIGURE 3

Graph of Predicted NOD-110
(Run 112-10) Edge Screen
Resolution Based on
.05 MTF. (Focal Setting
at Best Axial Focus)



8-9 FEB 68

25X1

SRI



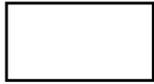
{ COMPLETED @ 3X
ARRIVE @ 905 SANTA ANNA #102
PROBABLY THERE BY 10:00

FILM MOTION .1"

THANKS CAN MAKE SAME SYSTEM UP TO 20X

1. FILTERING IR OUT
2. MODE OF TRANSPORT

NOTE

1. SCREEN IN MTF?
 - 2. GET MTF DATA TO 
 3. ILLUMINATION
 4. WHAT IS TOTAL PATH LENGTH - 200"
- 6600 - 240 SEC 4 MIN
360-65 - 35-40 MIN
GREYS PROGRAM

25X1

D.E.F.E.C, WEIGHTED

1. WILL GET RESOLUTION BUT THE ^{MAY} ~~WILL~~ GIVE BAD SCENE SHIFT PHASE AND TO BE CONSERVATIVE SHOULD USE FIRST CROSS POINT APPROX. .05

①
E P C ① @ 70X Chromatic Not too much work

Bruviers Program

1. Spherical

2. Astig

3. Coma

4. Dist

5. Petzval

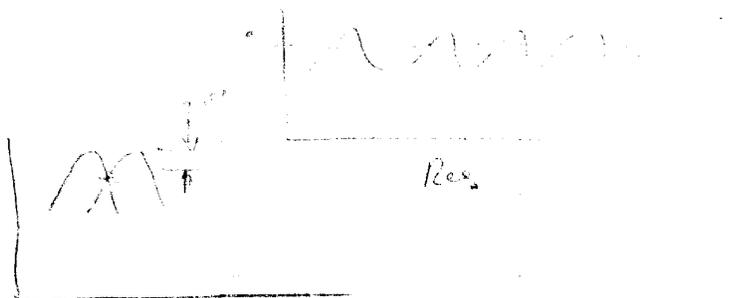
6. Chromatic

7. Spot Diagrams (2 Dimential)

STAT

20 DEC 1967

1. Distortion @ 1% used
2. Assumed that there was no focal change required to achieve the data presented
3. No objection to SRI info
4. Will look at pushing high range down to 20X
5. 1st: look at Zoom and Negative Optimized together to see if 3X-30X can be improved
2nd: Will include info up to 30X



6. What does program assume as object contrast
The output cutoff is 5% contrast.
7. Hanovia - Made aware that Xenon-14 might have higher brightness for same input power. The straight Xenon has a more nearly "daylight" light ~~lighter for color, at night on~~
~~to the much shorter~~ ~~not as desirable~~

8. Will try to get a better image plane by taking smaller increments of defocus.

9.

no positive aux. at low range now, will not vignette at the corners.

10. Possibility that even though Phase II available as [] might not go ahead because of management decision not to invest more of [] money than they have at this point. before NOD 100 is sold.

11. Report

1. Narrative
2. Comments re O.T.F.
3. Performance Predictions
4. Early part of Jan 10
5. P.I.

OA Requirement ~~but~~ off-axis
will be substantially better
on Hydro than 100

STAT

[redacted] 100

{ ON-AXIS RESOLUTION LOW. WILL OURS BE
HIGHER. P12 FUTURE MOD-100'S WILL
HAVE IMPROVED ON-AXIS TO BE LIKE MOD110/120
CAN S.R.I. LOOK AT [redacted] MOD 100

STAT

NEWTON RINGING ? COVERED BY COLOR
FRINGING

1. WITH EXTENSIVE INCREASE OF $9\frac{1}{2}$ " INPUT THIS WILL BE MOST USED (NEW SYSTEM LARGE QUANTITY)
2. NOT GOOD ENOUGH AT LOW END NOT MUCH BETTER THAN NO I/O
3. PROBABILITY OF OBJECTS OF INTEREST AT EDGE AT LEAST AS GREAT IF NOT GREATER THAN QA.
4. DEVISE READY ONLY USE FOR SCREENING

Because NO0110 is D.P. on axis the get SRI W.F.
 6.7X eyepiece and mount in center of screen
 could scan at 3X and would blow up to 10X
 projection.

3542	74	1	1	¹⁶ 3 1/2
30188				48
<u>13.02</u>				<u>8</u>
35037	2.00			56
56.00 PD	<u>2.50</u>			
9.00	5.00			
<u>415.39</u> ←	<u>4.00</u>			
	4.00			